THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

VOL. V. No. 93—7th YEAR.] LONDON, MAY 13, 1856. [Subscription per Ann. 15s. in Advance 18s. Credit. Price 8d. Unstamped.

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With power to increase.
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Messrs. Atchison and Hathaway, 38, Lincoln's Inn Fields.
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The Union Bank of London.

This Company has been formed under the provisions of the Limited Liability Act, 1855, for the purpose of carrying out, on a highly remunerative scale, Mr. Hansor's Patented IMPROVEMENTS in the MANUFACTURE of ILLUMINATING GAS from OLEAGINOUS SUBSTANCES. Arrangements of a satisfactory nature have been provisionally concluded for granting Licenses for the Manufacture and Sale of Hansor's Patent Apparatus in different parts of the country. Large returns will be thus at once secured, without any corresponding outlay of the capital of the Company, which will be principally employed in the manufacture and supply of the oleaginous material from which the gas is manufactured. Steps have been also taken for the introduction of the invention into the colonies and foreign countries, where coal is scarce, and oleaginous products, suitable for the manufacture of gas upon Hansor's principle, cheap and abundant.

A deposit of £2. 10s. per share will be payable on the allotment of the shares, and the remainder of the capital as it may be required, in calls of £2. 10s. per share, at intervals of not less than six months; three months' notice will be given of each call. Interest at the rate of £5 per cent. per annum will be allowed on the amount of any calls paid in advance.

Applications for shares to be made to Messrs. EYKYN, Brothers, 22, CHANGE ALLEY; or at the Company's Offices, 38, LINCOLN'S INN FIELDS, London, where prospectuses, orders to see the light, full particulars of the inventions, and all other information as to the proceedings of the Company, may be obtained.

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JOS. COWEN and CO.,
BLAYDON BURN, NEAR NEWCASTLE-ON-TYNE.
Were the only parties to whom a PRIZE MEDAL was awarded at the GREAT EXHIBITION of 1851, for "GAS RETORTS and OTHER OBJECTS in FIRE CLAY."

J. C. and Co. have been for many years the most extensive Manufacturers of Fire Clay Retorts in the United Kingdom; and orders for Fire Clay Retorts of all shapes and dimensions, Fire Bricks, and every other article in Fire Clay, are promptly executed at their works as above.

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THE OLD TUBE WORKS,
CHURCH HILL, WEDNESBURY,
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and 69, UPPER THAMES STREET, LONDON,
Original Manufacturers of Wrought-Iron Gas Tubes, and Holders of the present Patents; Inventors and First Makers of LAP-WELDED FLUES for Boilers; have been awarded the FIRST PRIZE in the Great Exhibition of Paris for these Articles.

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WILLIAM COCHRAN CARR,
begs most respectfully to thank the Metropolitan, Provincial, and Continental Gas Companies for their patronage for several years past, and to intimate that he has rebuilt and enlarged his extensive premises for the Manufacture of CLAY RETORTS; and that he is now prepared to execute the largest orders with punctuality and despatch. Orders for FIRE-CLAY RETORTS, of all shapes and sizes, FIRE-BRICKS, and all other Articles in Fire-Clay, executed on the shortest notice, and on the most reasonable terms.
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ANGLO-ROMANO GAS COMPANY.
THE Shareholders are informed that the FOURTH HALF-YEARLY DIVIDEND, at the rate of 5 per cent. per annum, will be payable at the LONDON AGENCY of the COMPANY, 1, NEW BROAD STREET, on and after the 13th inst., between the hours of Twelve and Two daily.

The Company have resolved to issue the remaining Shares forthwith, and to complete the Lighting of the City, for which an urgent appeal has been made by the Roman Public.

Applications for such Shares may be made to the Committee of Agency on or before the 30th inst.
May 5, 1856. JAMES SHEPHERD, Gérant.

GAS-FITTERS' MUTUAL ASSOCIATION.
A LECTURE will be delivered on THURSDAY EVENING NEXT, May 15, 1856, at the Commercial School, 96, St. Martin's Lane, by LEWIS THOMPSON, Esq., M.R.C.S., &c., on COMBUSTION. Chair to be taken at Half-past Seven o'clock precisely.
Tickets for Non-Members may be obtained at the Door. E. A. HUTTLY, Secretary.

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THE Falmouth Gas Company will receive TENDERS for the ERECTION of a GASHOLDER, 48 feet diameter, 20 feet deep, with Columns, &c. Also a WET-LIME PURIFIER Wanted. For particulars, apply to Messrs. J. and J. MEAD, PENRYN, Cornwall.
Penryn, May 6, 1856.

ARTIFICIAL Hydraulic or Portland CEMENT, for Brickwork, Concrete, Plastering, &c., combines the valuable qualities of the natural Cements, with the additional advantage that it greatly excels them in its cementitious properties; that it is not affected by frost, and does not vegetate in damp situations. Account of COMPARATIVE EXPERIMENTS on the strength of this and other Cements (read at the Institute of Civil Engineers) to be obtained from the Makers, JOHN BAZLEY WHITE and BROTHERS, Millbank Street, WESTMINSTER, who prepare one quality only of Portland Cement.

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WROUGHT-IRON GAS TUBING,

commencing from the *earliest* introduction of Gas Lighting into this country.

Manufacturers of every size and description of Wrought-iron Tubes and Fittings, from one-eighth up to seven-inch internal diameter, for Gas, Steam, or Water.

PATENTEES AND MANUFACTURERS OF THE

LAP-WELDED FLUES,

for Marine, Locomotive, and Stationary Boilers.
Inventors and Manufacturers of

IMPROVED STEAM AND GAS COCKS,

in Iron and Gun Metal, from three-eighths to six-inch bore. Manufacturers of every description of hand-screwing

STOCKS, DIES, AND TAPS,

for Gasfitters and Engineering purposes.

Manufacturers of Coils, for hot water and other purposes; Casing of all sizes, with flush joints, for Well-sinkers; Blasting Tubes; Buffer Tubes for Railway Carriages; Tubes for Roller Beams; Spindles, Shafts, Pendulums, Hydraulic Presses, Core Bars, Steam Gauges, &c. &c.

JAMES RUSSELL and SONS beg to call the attention of Engineers, Builders, Water Companies, and others, to their

PATENT ENAMELLED TUBES,

which preserve water or other liquids conveyed by them in a perfectly limpid condition; whilst the Enamel itself is as pure as the finest Porcelain, possessing the rare recommendation of being entirely free from any noxious ingredient in its composition.

Lists, Estimates, &c. &c., forwarded on application; orders, from 10 to 100,000 feet of gas tube, executed at twelve hours' notice if required; and quality may be safely relied upon, as all goods are most carefully tested before leaving the Works.

JAMES RUSSELL and SONS have great pleasure in calling attention to the annexed award:—

"EXHIBITION OF THE INDUSTRY OF ALL NATIONS, NEW YORK.
"Office: No. 6, Charing-cross, London, April 5, 1854.

"Gentlemen,—I have much pleasure in informing you that the Jury has awarded to your firm 'HONOURABLE MENTION FOR LAP-WELDED IRON TUBES.' You are at full liberty, if you deem it likely to promote your mercantile advantage, to affix to these articles, during the season 1854, a card whereon this Award is printed, and also your prices, with name of agent, &c.—I am, gentlemen, your obedient servant,

"Messrs. JAMES RUSSELL and SONS, Wednesbury, STAFFORDSHIRE." "JOHN H. BOHN, Secretary."

JOURNAL GAS LIGHTING NEWSPAPER PENNY

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FIRE-BRICKS of all descriptions. Manufactory established in 1804.

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April 27, 1854.

OXIDE OF IRON PURIFICATION—**FREE.**

MR. RICHARD LAMING, M.R.C.S., the Inventor of Gas Purifying by Revivified Oxide of Iron, has lately succeeded in producing a very efficacious Oxide of Iron, the use of which is actually DISCLAIMED by the Patent under which Royalties are levied in England. The new Oxide, therefore, furnishes Gas Companies with a sure means for obtaining the advantages of Mr. Laming's Invention without having to contest the validity of that Patent; and, on the other hand, the disclaimed Oxide may be used with such superior facility and effect as to reduce the whole cost of purifying to comparative insignificance.

For particulars, direct RICHARD LAMING—Messrs. GEO. and FREDK. EVANS, Agents—118, Fenchurch Street, LONDON.

TO GAS ENGINEERS AND CONTRACTORS.

THE Directors of the Hedon Gaslight COMPANY are desirous of receiving PLANS, SPECIFICATIONS, ESTIMATES, and TENDERS for the PROVISION and ERECTION of WORKS for the MANUFACTURE and SUPPLY of GAS to 200 Private and 40 Public Lights, on the most approved and modern construction, with arrangements suitable for an extension of the Plant for an increased business.

The Tenders to be made under the following heads, viz.:—

A Price for the Works (including Fireman's Cottage) complete in every respect.

Prices for 4, 3, and 2 Inch Pipes and Connections delivered in the town.

Prices at per Yard for laying the same in an approved manner.

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A Plan of the proposed site for the Works and further particulars may be obtained on application to G. R. PARK, Esq., Hedon, near Hull, to whom all proposals must be sent on or before the 10th day of June next.

The Directors do not bind themselves to accept the lowest Tender, but the Contractor whose plans and estimates are approved will be required to provide all materials and carry out the works. All others will be duly returned to the respective owners.

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Fifty 16-inch Mouthpieces, 12 inches deep, with 6-inch socket branches; fitted complete with lugs, crossbars, screws, and two wrought-iron covers each. Weight of each mouthpiece complete, about 3 cwt.

Thirty-three D-shaped Mouthpieces, 18 inches by 12 inches, fitted with ears.

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Six 7-feet Lengths of Hydraulic Main, D-shaped, 12 inches by 13 inches, with covers, and five 3-inch dip-pipes in each.

Eight Crutches for supporting Hydraulic Main.

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TO GAS COMPANIES, ENGINEERS, AND MERCHANTS.

EDWIN DIXON,

WROUGHT-IRON TUBE WORKS,

WOLVERHAMPTON,

begs with the utmost confidence to solicit the order of Gas Companies, and persons using or selling Gas Tubes. Having for a long period supplied the largest Gas Companies and Consumers in the United Kingdom and the Continent with unvarying approbation, and almost exclusively the Local Boards of Health under Government Engineers, with Galvanised Iron Tubes and Connections, it has become an inducement to make such facts known.

Large Stock always being on hand, orders of any magnitude, from 10 to 100,000 feet, are executed promptly, and carefully tested by powerful hydraulic pressure before leaving the Works.

Boiler Tubes, Core Bars, Hollow Spindles, and Hydraulic Press Pipes, to resist 5000 lb. to the square inch, made on the shortest notice.

The only Prize Medal of the Great Exhibition, 1851, awarded.

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consist of Eighty-nine patterns, sizes, and varieties of GAS HEATING STOVES, Twenty kinds of Gas Cooking Ranges, Counter, Greenhouse, Bed-room, Office, Shop, Warehouse, Church, and Hall Stoves; Lacquering, Boiling, Steaming, Stewing, Ironing, and Griding Stoves; Ovens, Baths, Liquor, Shop, and Ornamental Stoves; the whole either Black, Galvanised, or Enamelled. A new Book, just published, with 43 pages of interesting matter to all concerned in Gas, sent on application—postage one penny. The Stock includes upwards of ONE HUNDRED AND TWENTY kinds, prices, patterns, and sizes, and is the most extensive variety and stock ever attempted before. Their success continues great, as the numerous references prove.

56, & 57, INGE STREET, BIRMINGHAM.

*** Gas-Fitter and Gas-Fitting Manufacturer in every branch of the Trade, and to any extent.

TO ENGINEERS, BUILDERS, AND OTHERS.

THE DIRECTORS of the St. Alban's GAS and WATER COMPANY are desirous of receiving TENDERS for ENLARGING the GAS-WORKS in that town, agreeably to plans and specifications, which may be seen at the offices of Messrs. PAGE and CAMERON, auctioneers and surveyors, 61, Old Broad Street, London; or at the Manager's Office, London Road, St. Alban's.

Sealed tenders to be delivered at my office, at St. Alban's, on or before the 15th day of May inst. No tender will be received after twelve o'clock at noon on that day. RICHARD GIBBS, Manager of the Works.

RETORT AND BOILER SETTING.

FREDERICK SIMMONDS, Sen.,

No. 11, WELLINGTON STREET, OLD FORD ROAD, Thirty years RETORT SETTER to some of the leading London and Provincial Gas Companies, to whom he can refer, begs leave to draw attention to his economical mode of Setting Clay or Iron Retorts, &c.

F. S. will engage to provide all materials and labour, or labour only.

TO THE DIRECTORS, ENGINEERS, AND MANAGERS OF GASLIGHT COMPANIES.

GENTLEMEN,—Having taken Pre-MISES, in connection with a Partner, for the Manufacture of Gas-Meters, I beg respectfully to solicit a portion of your favours on behalf of my firm, which will carry on its business under the style of "CROSLEY and Co."

I am already personally well known in the business to most of the leading gas engineers and managers in the kingdom, whose acquaintance I had the pleasure of making during my connection with my late relatives, Messrs. Samuel and John Crosley, of Cottage Lane, City Road, with whom I was engaged in their extensive Gas-Meter business for several years—and, in fact, was the late Mr. Samuel Crosley's principal and confidential assistant up to the time of his death; and, while so engaged, the late Mr. Samuel Crosley communicated to me the secret of the mixture of the metals which has rendered the Meters constructed by his late firm so Durable and so far superior to all others—many of them being now at work, after standing the test of about a quarter of a century's use.

Feeling as I do so earnestly the importance of maintaining the high reputation which the name of "Crosley" has so long enjoyed for the excellency of these Machines—both for accuracy and quality of workmanship and materials—I am determined that all Meters manufactured by my firm shall contain the best materials of their respective kinds, and that the workmanship shall be such as may challenge the closest inspection.—I have the honour to be, Gentlemen, your obedient servant, WILLIAM CROSLEY.

GAS-METER WORKS,

103, Southwark Bridge Road, LONDON.

THROCKLEY CLAY-WORKS,

NEWCASTLE-ON-TYNE.

WILLIAM STEPHENSON and SON

Beg to intimate that they have erected extensive Works for the MANUFACTURE of every description of GAS RETORTS, FIRE-BRICKS, LUMPS, &c.

The Clay having been proved (by analysis and the application of extreme heat) of FIRST-CLASS quality, they can confidently recommend it.

UNEXCEPTIONAL REFERENCES given, and orders NEATLY and QUICKLY EXECUTED.

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PADDON AND FORD,

PATENT GAS METER & APPARATUS WORKS,

GRAY'S-INN-ROAD, LONDON,

Manufacturers of WET and DRY GAS METERS, STATION METERS, GOVERNORS, EXPERIMENTAL APPARATUS, GAS STOVES, and LANTERNS.

Contractors for the erection or alteration of Gas Works; and every description of Apparatus required in Gas Works supplied.

JOHN DOULTON, BROTHERS, AND CO.,

LIVERPOOL POTTERY, ST. HELEN'S.

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MANUFACTURERS OF

Doulton's Stoneware Pipes. | Doulton's Invert Blocks, for Sewer Bottoms.

Doulton's Half-Socket Pipes. | Doulton's Patent Junction Blocks.

TERRA-COTTA CHIMNEY-TOPS, FIRE-CLAY FLUE-PIPES, RIDGE AND PAVING TILES, &c.

REDUCTION IN THE PRICE OF CLOSET PANS.

DOULTON AND WATTS,

LAMBETH POTTERY, HIGH STREET

LAMBETH,

Have reduced the Price of their

PATENT ENAMELLED CLOSET PANS,

WITH TRAPS, to

5s. 6d.

These Pans, therefore, which have a strong Vitrified Body, as well as a White Interior Glaze, may now be obtained at the price of the commonest description of Closet Pans.

GREAT REDUCTION IN PRICE OF DOULTON'S DRAIN-PIPES.

HENRY DOULTON AND CO.

Beg to inform Builders, Contractors, and others, that they have made a considerable REDUCTION in the PRICES of their

GLAZED STONEWARE DRAIN-PIPES.

Drawings and Prices will be forwarded on application.

MANUFACTORIES, HIGH STREET, LAMBETH, LONDON; ROWLEY REGIS, STAFFORDSHIRE; and SMETHWICK, near BIRMINGHAM.

OFFICES: HIGH STREET, LAMBETH, LONDON.

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NOTICES.

The next number will be published on Tuesday, May 27, and the subsequent numbers on each successive alternate Tuesday, till our project of weekly publication is carried into effect.

Stamped copies, when forwarded by post, must be folded so as to expose the stamp; they are otherwise liable to the full postage charge for letters.

This JOURNAL has been duly registered at the General Post Office for transmission abroad.

All Communications to be addressed to the Editor, No. 3, Parliament Street, Westminster; and orders for Advertisements to Mr. W. B. King, the Publisher, No. 11, Bolt Court, Fleet Street. Attention to these instructions is particularly requested, as letters addressed to the "Publisher of the GAS JOURNAL, London," have found their way to 122, Fleet Street, and have been opened "by mistake."

THE JOURNAL OF GAS LIGHTING,
WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, MAY 13, 1856.

NOTES ON PASSING EVENTS.

EVIDENTLY Sir B. Hall is disposed to quarrel with the results of his own legislation, and he is casting about to find some ground of open war with the Metropolitan Board of Works he called into existence. This disposition is manifested both by the expressed and the implied reproaches of the representative of the democrats of Marylebone, by the tendency of his measures in all cases where the board is concerned, and by the remarks his avowed organs habitually allow themselves to indulge in when discussing its measures. Unfortunately, the majority of the board does not appear to feel sufficient confidence in the strength of its own position, as the elected representatives of the ratepayers of the metropolis, to tell the honourable baronet that his approval or disapproval of its proceedings is a matter of no earthly importance; and it is to be sincerely regretted that Mr. Thwaites and his friends should have, in a manner, encouraged the interference of Sir B. Hall by yielding to his proposition to test the experiments upon the transporting power of the tides. This is letting in the small end of the wedge; and we fear the Metropolitan Board has committed a serious mistake in allowing any part of the questions it decides thus to be reopened. If Sir B. Hall be allowed to challenge the principles received by the engineers, and adopted by the board, on the subject of the position of the outfall, on what ground can the board object to his challenging the dimensions of the sewers, the details of the engines, or the indulgence of any other of the sanitary nonsense he has already committed himself to? Sir B. Hall asks for a week's observations upon the flow of the tides now—he may next ask for trial-works upon large or small sewers; upon the respective merits of the Cornish or of the rotary-motion pumping-engines; so that it may be necessary to allow him to go through an entire course of engineering before he can approve of the schemes of the Metropolitan Board. Surely the Legislature never could have contemplated this ridiculous interference with public business, nor, we think, is the Metropolitan Board justified in allowing it to take place. We, ourselves, have always warned the board that the danger we thus again call its attention to would arise; and earnestly do we conjure it to resist the attempt thus made to subject it to the tutelage of any red-tape officials, or ministerial obstructives.

Sir B. Hall has singularly ill chosen his reasons for interference on the present occasion. The test he asks for must be utterly useless, because it is impossible to make any observations upon the flow of the tides which should be able to throw any light on the subject in debate, unless they should include, at least, the period of one equinox. It is a mere farce to waste the time of a government engineer and of an officer of the board, in watching a float during seven days, or even during an entire lunation. If the wind were to blow strongly from the S.W. for several days, and then suddenly shift to the N.E., the whole of the observations previously made might appear to be falsified. Yet Sir Benjamin and his advisers coolly talk of submitting the projects based upon experiments carried on during three months consecutively, and checked by subsequent observations, to a test of this unsatisfactory description! But let the value of the test be what it may, the important question the Board of Works must settle is simply whether or not Sir B. Hall has the right—certainly he has the power—to question its decisions; and, if those decisions should not be in accordance with his opinions upon a subject he evidently knows nothing about, to delay the proceedings of the board in a serious manner? The ridiculous passage in the last quarterly return of the Registrar-General, to which we have alluded in another part of this JOURNAL, shows that the mischievous College of Health is disposed to thrust itself into this discussion, if the representatives of the ratepayers allow them the smallest excuse. Does Mr. Thwaites recollect that a certain gentleman, whose name we will not now mention, observed, on the evening of April 13th, 1855, that "the bill of Sir B. Hall was of a centralising character, and the great effect of centralisation was to drink up the very last drops of liberty?" Subsequent events have not falsified this assertion; and we urge him and his colleagues to resist the first attempts to submit their proceedings to the control of any govermental authority—which means centralisation.

It is the more necessary to call public attention to this subject at present, because the Hon. Mr. Cowper, president of the General Board of Health, has given notice of his intention to introduce, on May 20, a bill to alter and amend the Public Health Act, 1848—no doubt founded upon the unfair and garbled evidence taken before the committee of last year, which Sir B. Hall took care to "make comfortable." There is no probability that the uselesss and expensive piece of jobbery, called the General Board of Health, will now be put a stop to; for the composition of the House of Commons, and the evenly-balanced state of parties, render it necessary that Ministers should retain the patronage it creates. Administrative Reformers, too, in their anxiety to get "the right man into the right place," forget to ask what necessity there is for placing *any*body there? and lately they allowed Mr. Simon to be fastened upon the national Treasury for no other reason than that of having written flashy reports in very bad English, but which contained nothing of real value. Possibly we may be favoured with a bill upon the public health, applicable to the metropolis, as to all the kingdom, in which the opinions of that oracle, Dr. Waller Levy—we beg pardon, Lewis—may be embodied; and if this should be the case, the manufacturing interests of London must prepare for removal. Already their position is a difficult one; and if a mischievously active man were to be placed in the Home-office—a contingency by no means improbable—they would find it intolerable. Forewarned is forearmed. We hope that the various sections of the manufacturing public, and the other parties interested in the freedom of industry, will carefully watch the measure about to be introduced by the president of the General Board (or College?) of Health.

Lord Redesdale we regret bitterly to see amongst the crotchety persecutors of trade, for hitherto we were accustomed to regard his lordship as being one of the most business-like and common-sense men in the Upper House, to which House we also looked for protection from the applied

Socialism of modern sanitary reformers. We can understand that his lordship should feel particularly annoyed at the volumes of smoke from the potteries of Lambeth which pour into his committee-room; and, with him, we cannot see why the potteries or glass furnaces, which make the most smoke of all the London factories, should be exempted from the provisions of the Smoke Nuisance Abatement Act. The exemption is a disgrace to the Legislature which allowed it to be smuggled in; and if the act be retained, this exemption ought to be repealed. But we regret to find that Lord Redesdale insists upon the introduction of clauses rendering imperative the consumption of smoke in all situations; for there are some towns which so entirely owe their existence to the manufacturing operations producing the smoke, that the system of imposing sacrifices, or charges, upon the manufacturers for the supposed benefit of the towns, is no more nor less than a reversal of the ordinary laws of justice. Does this renewal of the crusade against smoke indicate anything beyond its avowed objects?

There is a curious little controversy going on before some of the Local Boards of Works with respect to the introduction of the Aylesford tubular drains, in which much ill-feeling, and, we fear, powerful interests, have been allowed to interfere. The question seems, however, to us to be a very simple one, if only regarded as a matter of common sense. The ordinary stone-ware pipes, salt-glazed, are practically impermeable, but rather costly. The Aylesford pipes, even when glazed, are porous, and, we suspect, permeable under considerable heads of water, but they are cheaper than the stone-ware pipes. Now, under the ordinary conditions of sewerage, the water flows in the pipes without any appreciable head of a nature to force the water through the pipes, so that for all practical purposes absolute impermeability is not needed in order to carry off the sewerage waters—especially in London, where the clay subsoil on which the pipes are laid is in itself impermeable. Nor can it be contended that the impermeability of the material of which a pipe is made is a necessary condition of its durability, for it is notorious that the red earthenware pipes of the Romans, far more permeable than the Aylesford pipes, have acted successfully for centuries. Unquestionably, the material of the stone-ware pipe is superior to that of the Aylesford pipes; but, as the latter will perform the ordinary functions of a pipe-sewer well enough for ordinary purposes, the whole question, to our minds, narrows itself into one of comparative economy. Wherever it is possible to maintain a free discharge in a sewer, at an equality of price, we ourselves should of course prefer the glazed stone-ware pipes; but we do not think that we should be justified in paying 15, or even 10, per cent. more for them than for the Aylesford pipes—or we should, in strict logic, be compelled to use the Devonshire china-clay pipes, the best and dearest of all. In some situations, of course, it would be necessary to use impermeable pipes; but these are questions in which the engineer must exercise his own discretion, for there can exist no invariable rule with respect to them.

A casual remark was made at one of the recent meetings of the Entomological Society which may eventually lead public attention to a fact of the greatest importance to the sanitary conditions of the country. It was to the effect that a small dipterous insect had recently shown itself in some of the southern counties, and had already in Wiltshire materially damaged the corn. We have ourselves received letters from France announcing the almost entire destruction of the vine crop; and really, if a change from the recent ungenial weather do not soon take place, it is to be feared that we shall be visited by a season of scarcity, with its concomitant suffering and disease. Fortunately, perhaps we should say providentially, we have a cessation of the horrors of war; let us hope that we may be spared those of famine; and, in the meantime, address ourselves seriously to provide for the evils which may arise from a cause so entirely beyond our control.

Projects for the improvement of the metropolis by pulling down and widening streets, and by creating parks in all directions, seem to be the order of the day. It is to be hoped that the Metropolitan Board of Works will guard itself against being hastily led into any of these projects, which certainly at present are thrust forward in a manner to divert its attention from the principal business for which it was named, viz., the improvement of the sewerage of the town, and the purification of the river. Whatever may be said with respect to the improved rentals obtained from the ground upon the lines of streets thus made, it must always be recollected that ground-rents are substituted for house-rents, and that much space is sacrificed. In London and in Paris, the average result of such town improvements has been a loss of 40 per cent. upon the amount of the sums at first required; and it behoves the Metropolitan Board to economise the funds at its disposal. A scheme has lately been proposed for bringing salt-water up to London to feed sundry ponds and artificial lakes, and the proposer coolly talks of finding the money for this twaddle by a penny rate! If the board do not pooh-pooh the tendency to thrust these wild fancies before its notice, we fear that its real business will soon be brought to a dead lock, especially as there appears to be a desire on the part of some of its members to delay the discussion upon the main-drainage scheme. At any rate, Mr. Wright made a very sensible recommendation on Friday last, when he urged his colleagues "to let the world see that they were men of business," and "avoiding procrastination and an infinity of debate," to arrive at some conclusion with respect to their principal duty. The present is a momentous crisis for the principle of local self-government. We have implicit faith in its results, if conscientiously administered; but, alas! we fear that flunkeydom, as Mr. Carlyle would say, has entered the board, and that addresses to the Crown and interviews with Ministers will lead it to forget its popular origin.

ON THE WATER SUPPLY OF PARIS.

(*Continued from page* 239.)

As was mentioned in our last article upon the water supply of Paris, the principal source resorted to for the municipal distribution is the *Canal de l'Ourc*, which terminates at the basin of La Villette, on the northern extremity of the town, at an altitude of about 82 feet 10 inches above the zero of the Seine gauge, at the Bridge of La Tournelle, corresponding with the mean low summer level of the river. The city of Paris, to quote the words of the report in the *Moniteur*, occupies both sides of a valley, at the bottom of which flows the Seine. On the right bank, and almost upon the summit of its northern slope, is constructed a gallery, following nearly the line of the Octroi wall, and throughout its length very nearly upon a level, (for from its starting-point at La Villette to its extremity at the Park of Monceaux, the total inclination is not quite equal to 1 foot, or at the rate of 0·00008 in 1), which serves as a distributing aqueduct. Its dimensions are 4 feet 3 inches at the chord of the invert, 4 feet 7 inches at the top water-line, and 5 feet 3 inches deep; and a secondary aqueduct is carried into a part of the Faubourg St. Denis, for the supply of the north-east part of the town, having a width of nearly 3 feet at the chord-line, 3 feet 3½ inches at the top water-line, and a depth of nearly 5 feet. Upon the length of these feeding aqueducts are placed several large mains, which distribute the water, during the day time, upon the northern bank of the Seine; and, being closed at night, allow the water to pass through other mains to the reservoirs upon the left bank, which, in their turn, feed the distributing pipes of that part of the town during the day; so that forcedly whatever supply is thus obtained must be intermittent. It is also to be observed that the height of the water-line of the Aqueduct "*de Ceinture*" above quoted (82 feet 10 inches) is that of the upper surface of the water; and, if we deduct from it half the depth of the aqueduct, and the height of the quays, or the lowest parts of Paris, above the zero of the scale, about 30 feet 4 inches, we shall find that the maximum theoretical head of water upon the mains cannot exceed 50 feet, without any allowance for friction.

There are eighteen mains supplied either directly from the Basin of La Villette, the *Aqueduc de Ceinture*, or the *Aqueduc St. Laurent*, as the secondary aqueduct is called; and in several cases these mains start from large galleries, or subways, of sufficient dimension to allow of their being examined and repaired without disturbing the surface. The best accounts of these works are to be found in a notice by M. Emery, inserted in the "*Annales des Ponts et Chaussées*" for 1842, under the title, "*Statistique des Eaux de Paris*," in the "*Etudes sur l'Administration de la Ville de Paris*," *par* Horace Say, 1846, and in the "*Traité de la Conduite et de la Distribution des Eaux*," *par* J. Dupuit, 1854; for the prefect's account is very meagre in this respect. The mains, however, may be briefly described by stating that they vary in diameter from 10 to 24 inches; and they usually terminate either in the storage reservoirs, or in the monumental fountains so liberally dispersed over the city. There are five of these reservoirs—two on the northern or right bank of the Seine, and three on the southern bank. Of the former, the reservoir at Monceaux is able to hold 350,000 cubic feet of water, and that of Menilmontant

70,000 cubic feet: of the latter, the Reservoir of St. Victor has a capacity of 210,000 cubic feet; the triple Reservoir Racine, near the Odéon, 210,000 cubic feet; and the double Reservoir Vaugerard 350,000 cubic feet; generally speaking, we believe that they are covered. Upon these mains, or *conduites maîtresses*, as they are called, the secondary mains are placed, for the purpose of supplying, first, the *fontaines banales*, or public fountains, from which the water-carriers, or anybody, may take what water they like by pails or jugs; secondly, the *bornes fontaines*, or street water-posts, from which private persons may take water for their own use; thirdly, the monumental fountains, from several of which the water-carriers are also allowed to draw water; and, fourthly, the private distribution to dwelling-houses or manufacturing establishments. There are also other fountains, called *fontaines marchandes*, from which the water-carriers who are able to afford the use of carts are supplied, on payment to the town: the water-carriers who supply by the pail, without carts, are allowed to draw water gratuitously from the *fontaines banales* and the fountains before mentioned, but not from the *bornes fontaines*, which are principally designed for the purpose of washing the gutters, and discharge their waters at about 1 foot 4 inches above the level of the street pavement. These details with respect to the mode of distribution, it must, however, be observed, apply to all the services which are fed by the other sources named in the previous article. The waters of the Ourc are, however, distributed to 30 monumental fountains, 52 *fontaines banales*, and 1634 *bornes fontaines;* each of which discharges at the rate 113 cubic feet per hour, at three separate periods of one hour each in the day during summer months, or 339 cubic feet per day; 227 fire or street plugs; 1 *fontaine marchande;* 254 gratuitous supplies to government offices or to municipal establishments; and 6120 house or trade services. In no case does the water supply to the private houses rise above the level of the first floor; generally speaking, it only rises to that of the ground-floor.

The waters pumped from the Seine at Chaillot are raised into four ancient reservoirs, stated by the prefect to be situated at heights varying between 98 and 118 feet above the mean low summer level of the river, and into a new wrought-iron tank, whose height is not mentioned; but from the observation that it is placed upon a masonry base erected on the culminating point of the hill of Chaillot, itself about 135 feet 6 inches above the zero of the scale at the Bridge of La Tournelle, it may be assumed to be at an elevation of about 150 feet above that point. Four mains start from these reservoirs; two from the old, and two from the new ones. Of the former, one passes along the line of the Boulevards, and finishes at *La Place de la Bastille;* the other passes down *La Rue St. Honoré*, and finishes at *La Porte St. Denis;* of the latter, one main is carried along the higher portions of the town on the north side, and the other is carried to the *Bois de Boulonge*. The engines also pump directly into a main 2 feet in diameter, which conveys the water to a reservoir on the *Place de la l'Estrapade*, about 15 feet above the level of the hill of the Pantheon. The waters from the Bridge of Notre Dame are raised to the same *Réservoir de l'Estrapade*, and at the commencement of last year the old machines of *Le Gros Caillon* continued to supply the 10th and 11th *arrondissements*. The waters of the *Aqueduct d'Arceuil* are also received into and distributed from these reservoirs, as well as the surplus of the waters from the artesian well at the Abattoir of Grenelle.

The mode of distribution is precisely similar in the case of these waters as in that of the *Canal de l'Ourc;* they are never under sufficient charge to ensure their rising above the level of the first floor of the houses, unless it be in close proximity to the starting reservoirs; and a very large portion of their supply is absorbed by the monumental fountains and the *bornes fontaines*. Thus it appears that there are 3 monumental fountains, 17 *fontaines de puissage* or *banales*, 140 *bornes fontaines*, 4 plugs discharging under the pavement (*bouches sous trottoirs*), 43 watering-posts and fire-plugs, 12 *fontaines merchandes*, 128 supplies to government or municipal offices, and 1234 private distributions. The springs of Belville, Menilmontant, &c., are distributed by means of 5 *bornes fontaines* and 34 private supplies.

The price at which the unfiltered Seine water is sold—and this, by the way, is preferred by the Parisians to the waters of the Ourc—is, at the *fontaines marchandes*, 9 centimes per *hectolitre*, or, in round numbers, about 3s. 2d. per 1000 gallons; the price of the filtered water is about 1-9th dearer, or, in round numbers, 3s. 6d. per 1000 gallons; in both cases, however the cost of delivery must be added. The water delivered for trading purposes, or for house supply, is charged for at the rate of £2 per annum for a measured supply equal to 220 gallons per day, rising only to the ground-floor level. We have no means of ascertaining the precise quantity of water distributed by the monumental fountains; but, from M. Emery's notes, it would appear that in 1842 it was equal to about 1,000,000 gallons per day, and the quantity poured upon the streets by the *bornes fontaines* may be taken, in round numbers, at 4,000,000 gallons, leaving disposable for the actual supply of the town the supposed quantity of about 27,500,000 gallons. The prefect, however, in his report (*Moniteur*, Dec. 5, 1854), avows that the quantity of water actually distributed is only equal to 52-74ths of the whole of the supply; so that, in fact, instead of the population of Paris having at its disposal for all purposes 32,500,000 gallons, it has barely 20,000,000; and if from this the waters poured so liberally upon the streets be deducted, it would appear that substantially there are only 15,000,000 gallons at the service of the inhabitants—or, in round numbers, less than 15 gallons per individual, instead of the 31 gallons which appear at first sight.

But the Paris water supply is most especially objectionable because of the manner of its distribution. As the water never rises above the first floor, all that which is consumed by the inhabitants of the upper parts of the houses must either be raised by servants or by water-carriers; and to this, perhaps, may be attributed the fact that, although the Parisians bathe a great deal, a Paris washhand-basin is usually as big as a pie-dish. Water-closets upon the upper floors are either very badly supplied or are entirely wanting, and the consequence is, that the back yards of most houses in Paris are disgusting beyond description to any person who has been accustomed to reside in the recently-constructed portions of London. In case of fire, too, the system adopted in Paris is so defective, that until very lately—even if it be not still the case—the passers by are compellable by law to stop and labour at what is called "the chain," or to pass from hand to hand the buckets of water filled from the nearest *borne fontaine* or fire-plug. Fortunately, from a series of complicated circumstances, the houses in Paris are not built with such combustible materials as those of London; but, whenever a fire does happen, it can rarely be stopped until it has exhausted itself, so imperfect and deficient is the system of supply. Street watering and the flushing of the sewers are, however, remarkably well provided for by means of the *bornes fontaines* and the watering-posts; and the numerous monumental fountains serve to communicate a coolness and freshness to the air which is much required in the narrow, confined streets of Paris. We might take a lesson from our neighbours in both the use of the monumental fountains and of the *bornes fontaines;* in all other matters, the system of water supply adopted in Paris must be pronounced to be barbarous and contemptible in the extreme. Even the gratuitous distribution of water may be considered an evil, for it prevents any effectual attempts to improve the distribution; and is, after all, but a very equivocal mode of taxing the rich to relieve the poor, for the cost of the gratuitous supply must be borne, in one shape or another, by the municipal finances. For our own parts, we contend that all this practical Socialism is sovereignly unjust, and that—especially as applied in France, by means of funds raised by octrois—it is extremely oppressive upon the most respectable classes of society, because the poor are encouraged in habits of extravagance and improvidence on the strength of the advantages procured for them by contributions raised from the resident, hardworking tradesmen, but from which the rich easily escape. These abstract questions of political economy may appear to have little bearing upon the question of a water supply, but eventually the mode of raising the funds for works of this description will be found to influence the mode of their execution in very extraordinary ways. Men are never so disposed to look so closely after any branch of municipal service as when they pay directly for its discharge, and in proportion to the extent to which they avail themselves of it; nor are the public servants so likely to fulfil their duty or exercise their intellect as when they know that they are directly in contact with their employers' interests and convenience. These remarks, too, be it observed, are made without reference to the consideration of the justice or injustice of a municipality's placing itself in the position of a monopolising trader.

In 1854 the Prefect of the Seine submitted to the Municipal

Council a project for bringing to Paris the waters of the united rivulets, the Somme and the Soude, by means of an aqueduct about 107 miles long, which should arrive in Paris at a point situated at about 100 feet above the level of the *Bassin de la Villette*. The estimate for this work is stated in round numbers to have been £1,000,000 stirling; and the prefect declared that the waters would be of a quality immeasurably superior to those at present distributed—for even he appears to have been taken in by the impudent nonsense published by our Board of Health, and to have thought it necessary to secure a water free from the salts of lime. Of course, this estimate would have been doubled or trebled, for municipalities cannot bear to hear truth; but its amount has been sufficient to prevent any attempt at improvement in the Paris supply, because the prefect—another Sir B. Hall—will not hear of any other scheme than his own, and the Municipal Council of Paris are either unwilling or unable to undertake this useful work, at the same time that they are executing wide streets to facilitate military operations against their fellow-citizens. Be this as it may, the fact still remains, that in Paris the water supply—executed by engineers named by the Government, after a long course of special education and severe examinations, under the orders of the Municipality of Paris, and the control of the Prefect of the Seine, the Ministers of Commerce, of the Interior, and of Public Works—is both inferior in quality, in quantity, and in economy, to the water supply of London, executed by private companies at their own risk and peril, and by engineers who have principally been educated in the hard but valuable school of practical experience.

We commend these facts to the attention of the "clean" party (so called on account of its propensity for jobbery). The English public, we are convinced, when it once learns the truth of these matters, will not hesitate to decide against the extension of any such obstructive red tapeism.

ON THE DISPOSAL OF TOWN SEWERAGE.

There occurs a paragraph in the "Quarterly Return of the Marriages, Births, and Deaths of England," just published, by authority of the Registrar-General, which forces this subject of the disposal of town sewerage upon our notice in a more forcible manner than we ourselves should have desired; because, for several reasons, we should have preferred to have made further investigations into the subject before attempting to answer Mr. Walker's letter, inserted in our last number. The Registrar-General has, however, rushed into the discussion in so extraordinary a manner, and has assumed to decide at once upon its merits in so offensively oracular a tone, that we are compelled prematurely to resume the consideration of this question, if it were only in order to protest against the conclusions of that self-created and very doubtful scientific authority.

The passages in the report to which we allude are as follow:—"The average rate of mortality in the last ten winters has been 2·525 per cent. per annum in all England; but the rate in town districts has been 2·745, and in the other districts 2·278 per cent. per annum."—"The question of the health of towns is, therefore, a question of the strength of England."—"*The principal cause of the insalubrity of the dense districts is the want of adequate means to redistribute over the earth the organic matter which is reduced to refuse in the towns; and any proposal to throw the town guano wastefully into the rivers of the kingdom would be an imperfect and an unsatisfactory solution of the problem.*"

Really, we are so staggered at this paragraph that we do not know how to deal with it. It is so utterly devoid of common sense, of philosophy, or even of attention to the ordinary rules of English grammar, or composition, that if it had not been published at the expense of the nation, and circulated with all the pomp and circumstance of a government paper, we should have passed it over in silent contempt, and consigned it to the same limbo as the "able reports" of the medical officers of the Local Boards of Works. The English public, however, unfortunately attaches importance to documents which emanate from the Government; and it is, therefore, important that this portion of the registrar's report should be noticed, in spite of its utter worthlessness. We said that it was written in defiance of the ordinary rules of English grammar and composition, and as that is the least of its errors, we deal with it first, particularly as our modern Solons are so severe on these subjects that they reject candidates for situations of landing-waiters, &c., with salaries of £80 a-year, on this precise ground. But the errors in philosophy are equally glaring, and we seriously call the attention of Administrative Reformers to the necessity of infusing some common sense into this branch of the civil service, even if the job must be retained. We apply this harsh term simply because it is inexplicable that documents of the nature of the last report can be issued without calling for inquiry; and their repetition must be considered as great a reflection upon the members of the House of Commons as upon the office itself from which they emanate.

What does the Registrar-General mean by saying, that "the principal cause of the insalubrity of the dense districts" (he means densely peopled) "is the want of adequate means to redistribute over the earth the organic matter which is reduced to refuse in the towns?" Ought we to redistribute the corn, and the meat, and the vegetables, in their natural state, to the earth? This *is* the meaning of the phrase as it stands in the report. Or does he not rather mean that the organic matters which have been reduced to refuse (he means to say, eaten or drunk) ought then to be redistributed? He should write English at least, if he must write nonsense. Then, when the Registrar-General tells us that "any proposal to throw the town guano wastefully into the rivers would be an imperfect and an unsatisfactory solution of the problem," he not only forgets to tells us of what problem he speaks, but he also begs every disputed point involved by the use of the phrase, town guano, and by his mere *ipse dixit* pretends to settle the whole difficult and complicated question of the disposal of town sewerage. Very discordant opinions are entertained upon this subject by men of far superior claims to scientific authority than the Registrar-General, and it would have been both more modest and safer for him to have expressed an opinion, rather than to have thus made an unqualified assertion, totally uncalled for on his part, upon a matter still involved in so much obscurity.

But is it not an insult to the common sense of the nation to be told that the "principal cause of the insalubrity of the dense districts is the want" of a system for the application of town guano? Hitherto we have been led to believe that bad drainage, ill-constructed houses, unhealthy occupations, deficient ventilation, bad water, and the immoral habits of large classes of the population, had fearful power to increase the insalubrity of densely peopled districts. Now we are told that these potent causes of evil are as nothing in comparison to the want of, perhaps, sewerage irrigation! In one of the recently published summaries, emanating from the Registrar-General himself, it is stated that the annual rate of mortality in Islington is 19 in 1000, whilst that of St. Martins-in-the-Fields is 24 in 1000, or respectively about equal to the rates prevailing this winter in country and town districts. Has Islington any system of sewerage irrigation? or how does Sir Oracle explain this startling commentary upon his own statistics? If there be any truth in the assertion, that "the principal cause of the insalubrity of dense districts" is the one now in favour with official authorities, we ought to find that Rugby should enjoy almost entire immunity from the ills that flesh is heir to—"*cessante causa, effectus ipse cessat;*" yet the very tables appended to this report show that the rate of mortality in that registration district is, if anything, rather in excess of the average for country districts, notwithstanding its advantages of air, sanitary improvement, and sewerage irrigation. How can the City ever "redistribute over the earth the organic matter which is therein reduced to refuse? Are we to irrigate Smithfield, or the Temple; or allow the sewerage to run upon the surface of our streets? Yet, if something of this kind be not done, the Londoners are, according to the Registrar-General, to be for ever afflicted with an excessive rate of mortality. Oddly enough, too, the very report which contains this startling nonsense refers to the improved state of the sanitary condition of Southampton, where not only is there an utter absence of sewerage irrigation, but where actually all the so-styled town guano is thrown wastefully into the river; and another equally important remark to be made is, that the practice of nearly all the Local Boards of Health, whose powers the Registrar-General has shown himself so anxious to extend, has been to do precisely that which he so strongly condemns, viz., to throw the town guano into the rivers of the country.

We protest against the use of the phrase "town guano," as applied to town sewerage, because it is unphilosophical and untrue, and likely to lead to much disappointment. The refuse from our towns must forcedly exist in the form of

liquid sewerage manure, and *that* is essentially different in kind, and in value, from the article with which it is now sought to be confounded. Guano is adapted for grain and root crops; sewerage manure is generally considered to be only adapted for grass, or perhaps for the coarse feeding vegetables. Guano is of small bulk comparatively, and can be applied anywhere without creating a real nuisance; sewerage manure is bulky, and can only be applied in certain situations, and under certain conditions. No doubt it is sad to think that substances containing valuable fertilising matters are wasted; but the real question is, how are they to be applied? Many able physioligists contend that the cattle fed on meadows irrigated by sewerage manure suffer in health, and that the meat they yield is of very inferior quality; something of this kind actually occurs in common irrigated meadows; and it would not be surprising if it did so; likewise, when sewerage waters are substituted for ordinary river waters. Hitherto there have been no experiments made, no consecutive observations recorded, of the physiological action of sewerage irrigation upon the cattle subjected to its influence. We have chemical analyses of the waters themselves, it is true, and a vast array of analytical science has been brought to bear upon the subject; but the investigation is one which, it strikes us, can never be thus ascertained, and in which a far higher class of intellect is required than is to be met with generally amongst analytical chemists. The questions involved are connected with organic life, far more than with inert matters, such as that class of philosophers usually examine; and, at present, we avow candidly that we have met with nothing which has appeared to us to justify an unprejudiced or impartial observer in asserting any decided opinion upon the proper mode of applying town sewerage. In this state of uncertainty, and when the agricultural interest holds itself aloof from any attempt to solve the questions of the real value of this sewerage, it is impossible to do more than adopt what may be called transitory measures—that is to say, to construct the outfall of sewerage works in such a manner as to allow of their being applied hereafter to the distribution of liquid sewerage manure, if that course should be found, indeed, to be the most "satisfactory solution of the problem," or temporarily to the discharge of the disinfected fluid into the rivers of the country. It is nonsense to talk of the waste of a description of refuse which must be got rid of, but which no one seems disposed to take.

We fear that the explanation of this passage on the Registrar-General's report is to be found simply in the desire to pander to the crotchets of men in power, and by implication to protest against the project of the engineer-in-chief of the Metropolitan Board of Works for the drainage of south London. If this be so, the criticism is as impertinent as it is absurd; and the best reply to it would be simply to recommend the Registrar-General to attend to his own business. His returns are very far indeed from possessing the scientific value they ought to possess; and he would do well to improve them before he ventures to offer opinions upon subjects he evidently has never studied.

With regard to Mr. Walker's letter, inserted in our last number, we thank him very sincerely for pointing out the error into which we were led by the incorrect information given to us; and we request him to assist us still further in the attempt to arrive at the truth in this very complicated question. We have heard, but certainly not from any authority to be quoted publicly, that Mr. Walker's cattle last winter suffered very severely—will he tell us whether this were or were not the case? and whether, if such illness did prevail, it presented any peculiarities different from those illnesses observed in the cattle of the irrigated districts of the south of England? In the latter districts, if the fields be flooded in summer time, the cattle allowed to graze after that operation are subject to the foot-rot. Is this the case at Rugby? If so, how is the sewerage disposed of in the summer months? Then, can Mr. Walker tell us what is the character of the meat obtained from animals fed in his meadows? and does it keep so well, or so long, as that obtained from animals fed in the ordinary way? Has he applied this sewerage irrigation to cereal crops? or is it only adapted to grass lands? Mr. Walker is now trying this system upon a scale which would entitle us to form a conclusion as to its merits; but no such conclusion can be arrived at until a trial of some years' duration has taken place; nor until all the circumstances we have alluded to—and perhaps many others—have been carefully and conscientiously examined. As a farming experiment, their solution will appear in the balance-sheet; and the question to be solved is still this—will the increased crops, or returns per acre, pay for an average first outlay of £6. 7s. 8d. per acre? and, we also ask, whether an irrigation with plain river water would not have produced nearly the same results? In the neighbourhood of Southampton, an irrigated meadow, fed by the waters of the Itchin or of the Test, will obtain a rent of £3 per acre, when a dry meadow will only be worth £1. 10s.; and the cost of conversion into a water meadow is usually about from £5 to £10. Are the results of the sewerage irrigation more favourable than these? Emphatically, to the farmer, this is a money question. To town populations it is a money question also; and they may depend upon it that they must be prepared to make considerable sacrifices in order to ensure its satisfactory solution. The greatest mischief which has been done in the matter, has arisen from the exaggerated notions of the value of sewerage diffused by the itinerant missionaries of the Chadwickian school.

Mr. Walker lays down a strange rule, or rather makes a very strange observation, when he says that a larger pipe would be clogged more frequently than a smaller one. He is travelling beyond his record, and making an assertion diametrically opposed to facts and experience; and, indeed, from the remarks he made with respect to the employment of a regularly qualified engineer, we suspect that he has only been in contact with the itinerant missionaries we have mentioned, who have given him false opinions upon many questions of engineering detail. All our remarks with respect to "the errors of construction" remain as forcible now as they did before Mr. Walker favoured us with his letter; for we ventured, in no unfriendly spirit, we assure him, to criticise the style of engine, the sizes of the distributing mains, and the mode of applying the distributing hose. He must allow us to think still that no properly qualified engineer would have recommended these things; and we regret that he should have fallen into the hands of a man styling himself to have been one who should have so far misled him as to have compromised, even for a time, the result of an experiment so important to the public at large, and so nobly undertaken by Mr. Walker himself. We do not wish, however, to dwell upon this part of the discussion: all we desire is to know the real value of the principle involved; and once informed upon that subject, it would be easy to say how the sewerage manure ought to be distributed. For the present, we repeat that too much doubt overshadows the whole discussion to enable us to arrive at any definite conclusions with respect to it.

Circular to Gas Companies.

The objections urged by several of the gas companies promoting bills in the present session of Parliament, against the substitution of 12 for 10 standard sperm candles in the proposed model quality clause, have induced Mr. Brotherton, one of the committee on unopposed private bills, to move, on the 8th inst., "for a return of all gas-works established under acts of Parliament in England and Wales, and where situated; stating, in columns, the maximum charge for 1000 cubic feet of gas; the minimum charge per 1000 cubic feet; the material used; the average number of cubic feet of gas produced from a ton of coal; and the illuminating power of the light produced from an argand burner consuming five cubic feet of gas per hour, as compared with the light produced from sperm candles, six in the pound, and burning 120 grains per hour." This return was ordered to be made; and as it is a document which will be authoritatively cited, and may exercise considerable influence over the future course of legislation in respect of gas-works, it is of extreme importance that the returns made by gas companies should be carefully considered, and especially that there should be no exaggeration in the reports of the illuminating power of gas yielded by the different descriptions of coal. When the Cheltenham Gas Bill was before the committee, of which Mr. Brotherton is a member, he expressed a strong opinion that the minimum standard should be 12 candles, alleging that in Manchester and Salford it was never less than 18 candles; and there is no doubt that one of the objects in moving for the return is to force a high standard upon all companies which may henceforward apply for parliamentary powers.

We attempted, in our number for November, 1850, to supply a defect in the returns made in pursuance of Mr. Hume's motion, by publishing a tabulated statement, in which the several towns were arranged in groups, according to the description of coal used; an a reference to those tables will, we ap-

prehend, be of service to gas companies in preparing their replies to the return now required from them. Under the head of "Material Used," we submit it would be advisable to state the description of coal employed, and the source from whence it is derived; and also that a distinction should be drawn between the illuminating power of the gas produced in summer, from that obtained in winter, when the heavy hydrocarbons are liable to be condensed by cold, and thus seriously to diminish the illuminating power. This is of considerable importance, as, if an *average* is taken, the penalties may be enforced whenever the quality is found to be below that average; whereas, in justice, the penal clauses should only be operative when it is below the minimum. The following abstract of the tables above referred to may be useful to those who are unable to consult them:—

	Value of the 5-ft. Burner in 120-gr. Sperm Candles. Winter.	Summer.
Wigan cannel	20	23
Newcastle caking coal	11	15
Derbyshire	12	15
Yorkshire	10	13
Lancashire	10	12
Cumberland	10	12
Gloucestershire	10	12
Cheshire	10	12
Somersetshire	9	10
Staffordshire	9	10
South Wales } Dean Forest. }	8	9

No restriction is placed upon the height or form of the chimney-glass to be used, which, in the model clause, is required to be 7 inches high; it will, therefore, be useful to state the description of chimney used, and if any other burner gives a better result than the argand, to make a note to that effect.

We congratulate the shareholders of the companies supplying gas in the City of London upon the termination of the impolitic rivalry lately existing between them in respect of the public lights, the Chartered Company having just renewed its contract for three years for 1100 lamps, at £4. 2s. per lamp; and the Great Central Company for 1700 lamps, at £4. 4s.—*which latter is the identical price at which the citizens had been supplied for several years previous to the establishment of the Great Central Company.* The undermentioned have been the prices asked by the different companies since the competition commenced:—

April 29, 1851.—City of London Company...	£4	4	0
Chartered Company.....	4	4	0
Great Central Company....	3	17	6

This last offer was accepted for one year.

May 11, 1851.—Great Central Company....	£3	17	6
Chartered Company	3	12	6

City Company did not tender.

The Great Central offer was accepted for 1700, and the Chartered for 1100, lights for one year.

May 10, 1853.—City Company.....	£3	7	6
Great Central Company ...	3	3	0
Chartered Company.....	2	19	6

The last two offers were accepted for three years in their respective districts, and the contracts have just terminated.

The chairman of the Great Central Company is reported to have said, in palliation of the reckless conduct his company has pursued, that the present advance is only 6s. 6d. per lamp upon the late contract; but he must have intended to refer to the contract of 1851, the advance upon the tender of 1852 being in reality 21s.

The Town Council of the city of Chester has adopted, by a majority of 23 votes to 8, the following report of a committee appointed to take into consideration the amalgamation of the two gas companies carrying on their operations in that city:—

The committee recommended the council to give their consent to the Roodee Gas Company amalgamating with, or purchasing the works and plant of, the Chester Gaslight Company, upon the following conditions, namely:—

1. That the capital of the Roodee Gas Company, after such purchase or amalgamation, shall not exceed £50,000, as capital paid up at the time of such arrangement.

2. The company to be under a legal obligation to supply gas to public and private consumers of the best quality, to be ascertained by the usual test.

3. That the price of gas to private consumers shall not exceed 4s. 6d. per 1000 cubic feet.

4. That the charge for the public lights shall not exceed the sums specified in the schedule to the grant of licence, bearing date the first day of September, 1851.

5. That the company shall, at their cost, provide an approved test apparatus to ascertain the quality of gas supplied, the same to be fixed at a place to be determined upon by the council.

6. That the company shall not manufacture gas at the works of the Chester Gaslight Company, in Cuppin Street, after a date to be fixed upon.

7. That the council shall have power to appoint a person to inspect all the gas meters.

8. That, if the clear annual earnings of the company amount to 10 per cent. or more for three successive years, the council shall be at liberty to reconsider the condition fixing the maximum price of gas, and to reduce the price if thought proper.

9. That the repair of the pavement of the streets taken up by the company shall be done by the council at the expense of the company.

10. That, in case the council shall call upon the company to extend the mains to outlying districts, some reasonable conditions shall be annexed to the requirement.

11. That the council shall have power to inspect the books of the company.

12. That all cases of dispute which may arise between the council and the company shall be referred to arbitration, upon the terms laid down by the several acts of Parliament for regulating proceedings in arbitration.

It was further recommended to appoint the Mayor of Chester, for the time being, in virtue of his office, a director of such incorporated company; and the treasurer of the city, for the time being, in virtue of his office, one of the auditors of such company; and power was to be reserved to the corporation of purchasing the works and plant of such company by valuation, in the usual way, at a future time.

The committee suggested that, in the event of the council adopting the recommendation of the committee, that it be referred to a sub-committee, to be appointed for the purpose, to consider the best means of carrying out the above arrangements, either by agreement, act of Parliament, or otherwise.

Communicated Articles.

M. PECLET'S SUPPLEMENTARY NOTES TO THE SECOND EDITION OF HIS "TREATISE UPON HEAT."

(*Continued from page* 242.)

[THIRD ARTICLE.]

THE last building mentioned by M. Peclet, to which it may be interesting to call the attention of the English reader, is the one known as the *dépotoir de la Villette*, where some important works have been executed to ensure an efficient ventilation under the following circumstances:—The *dépotoir* was erected between the years 1845 and 1848, and set to work in the spring of the latter year, for the purpose of pumping from Paris to the reservoirs of Bondy the liquid matters brought by the night-carts, there to be operated upon for the extraction of the ammoniacal salts, and for the preparation of the "*poudrette*" so much esteemed by the French agriculturists. The building consists of nine sheds or bays, into each of which four carts can enter at a time, and under the passages are placed three equal rows of cisterns, with an upper opening, and a communication from one to the other by large openings at a low level, placed alternately to the left or the right of the centre line. The carts pass into these sheds; large sacks are placed under the bungs of the casks, so as to conduct the matters they contain into the cisterns without splashing; and as soon as the matters have escaped, the carts and the sheds are carefully washed with fresh water. The liquid matters flow through a channel, across which are placed some strainers, in order to keep back any solid matters of a nature to injure the conduits or pumps; and they fall into the feed-wells of a duplicate pumping engine of 25-horse power, by means of which they are forced through wrought-iron bitumenised mains, one foot clear diameter, to Bondy, which is situated at a distance of about 6¼ miles from Paris, and about 8 feet 3 inches above the level of the commencement of the main. When the fluid matters poured into the cisterns above mentioned have run off, the deposit, usually about 4 inches thick, is stirred up by means of a hose and jet working under considerable pressure; and, finally, workmen are sent to fill the matters too heavy thus to be removed into casks, which are sent off to Bondy by canal barges. In the beginning it was proposed to obviate the injurious effects of the foul air disengaged by this operation, or by the natural fermentation of the matters themselves, by a ventilation effected by a small engine withdrawing the air from a channel which only communicated directly with the last cistern; but it was found practically that under such circumstances the air of the further cisterns did not follow that of the one connected with the engine; and when M. Grouvelle was consulted with respect to the measures to be adopted, he at once said that it was necessary that each cistern should be, like the last, directly in communication with the ventilator. This was effected by forming in the haunches of the vaults three channels of 1 foot 4 inches square, into which secondary channels 1 foot square branch to each cistern, and these are terminated by two openings about 2½ inches square. Fresh air enters by the open trap through which the night soil had been previously introduced, and it passes off through the two openings, and through the channels to the ventilator, and is by it forced into a separate chimney carried up by the side of the principal flue. The velocity given to the stream of air, before reaching the ventilator in the channel 1 foot square, is about 26 feet 7 inches, and in the 7-inch pipe or outlet it is 40 feet 7 inches, discharging a volume in both cases equal to nearly 86 cubic feet of air per second. There was great irregularity in the velocity of flow from the different cells; for at the last, or the one nearest the ventilator, it was rather more than five times that observed in the most distant cell, and the difference is regulated by means of registars able to close the apertures entirely,

if requisite. Even in the sub-main of the last cell, however, the velocity of the flow of air is not less than 3 feet 6 inches per second, which is sufficient to renew the air in the cell at least six times in the hour.

We venture to digress from our immediate subject, in order to call attention to the remarkable work which gave rise to this very imperfect system of ventilation. The *dépotoir* at Bondy proves that it is possible economically to remove the whole of the sewerage of a town, in a far more concentrated state than it is usually found in England, to a considerable distance; and therefore there can be no excuse for the retention of such nuisances as the Croydon (so-called) filter-house in the immediate proximity to a densely peopled locality. At Croydon especially, it would have been easy to have distributed the sewerage waters by a system of catch-water irrigation at some distance from the town, without annoyance to the inhabitants, or without materially affecting the volume of the Wandle. Another remark to be made upon the *dépotoir* is, that the foul air is simply discharged at a distance from the ground, without being in any manner purified; so that the nuisance it creates to those parts of Paris situated above the level of the top of the outlet-pipe is only attenuated, without being destroyed. The numerous authorities to whose approval this work has been submitted during the long years its execution required, were not able to secure even the trifling precaution of forcing the foul air from the cisterns to pass over an open fire.

After the description of the works above alluded to, and of several others which did not appear to us of sufficient importance to justify their notice in our columns, M. Peclet proceeds to make the following observations upon the different modes of warming and ventilation:—

Warming.—Let it be at first assumed that the question to be decided is that of warming a room, or, in other words, of maintaining it at a given temperature. Evidently it will suffice to supply a quantity of heat equal to that which passes through the glass or the walls, when the latter shall have been once brought up to the required degree of heat, by a warming of greater or less duration. If the walls could instantly be brought to a degree corresponding with that of the external atmosphere, the quantity of heat to be furnished would vary every minute; but, as they retain much heat when once warmed, the quantity of heat to be furnished, and the external temperature, may vary within a very wide range, and during a very long interval, according to the nature and thickness of the walls, whilst the internal temperature would not sensibly change. So that, if the apparatus for distributing heat be only large enough, the fire may be always directed in a manner to secure an equal temperature.

The heat necessary to maintain the normal temperature may be produced by radiation, by warm air, or by both those systems. In our common grates, radiation is alone employed, and it is produced simply by the contact of the air when the surfaces warmed, either directly or by warm water, or by steam, are formed of polished metal, and are placed in the interior of the rooms. This heat is produced by warm air, when the heating surfaces are entirely exterior to the rooms; and, lastly, it results in a manner which is nearly equal from radiation and contact of the air, when the heating surfaces placed in the interior of the rooms are formed of wrought or of cast iron unpolished.

As radiant heat possesses the faculty of passing through the air without any sensible loss, if a room were heated entirely by radiation, the rays would only be lost against the glass and the walls; a part of the heat absorbed by the walls would serve to warm the air, ascending currents would be formed upon their faces, and descending currents in the interior of the room. By this system of warming, which is the one adopted in private houses, the air never attains a high degree of temperature, especially as it always produces a strong ventilation, which can rarely be fed with hot air from the fire-place. When a room, however, is warmed by a current of hot air, this air rises to the upper part rapidly; descending currents are formed upon the face of the walls, which warm them, and tend to preserve them at the regular heat when it has been once attained; and it is easy to maintain a constant temperature in the interior. From what has been above said, it may not be necessary to explain the effects which would take place if the warning be effected by radiation and by heated air at the same time.

It is supposed, in these remarks, that the temperature of the room is to be kept at a uniform degree; but there are few buildings, excepting hospitals, which require that this should absolutely take place. This uniformity of temperature may be maintained either by a continuous combustion in the fire-places, or by reservoirs of warm water which cool slowly. Unless, however, the walls are very thin, the heat they retain is almost always enough to keep up the requisite degree of warmth during the night, without any sensible diminution. Generally speaking, when the walls of a building are sufficiently thick, warming during the night may be dispensed with, and the loss of heat which may have taken place during that period may be compensated for by a more active warming in the morning. In factories, where the walls are thin, it is necessary to commence the warming some time before the arrival of the workmen. In buildings with thick walls, and in which the rooms are only used during certain hours of the day, it would entail great expense to maintain the constant temperature of the walls, or even to bring them to it when the rooms are to be used. Under such circumstances it is necessary, by means of an energetic warming during a few hours, to raise the temperature of the walls partially, and to compensate for their comparative degree of cold by an increased temperature of the air during the period that the rooms are being used.

In all cases, excepting in ordinary household fires, the heat developed by the grate is used to warm the surfaces which subsequently transmit the heat. These surfaces may be heated directly, or by the intervention of steam or of water. There are, therefore, numerous systems of warming, each of which has its advantages and disadvantages; and, moreover, there are particular circumstances attached to every building, and different conditions to be observed; so that no one system of warming can be said to be at all times superior to every other.

In some circumstances, when the rooms to be warmed are close together, and especially when it is necessary to keep down the first outlay, warm-air stoves are preferable. When it is important that the temperature should not vary to any serious extent, and when the rooms are few in number, and near the position of the generator, it is most expedient to employ steam or hot-water stoves. When the distances to which the heat is to be transmitted are great, warming by steam, or by water warmed by steam by means of partial circuits in reservoirs, should be preferred; because the velocity with which the warm water circulates diminishes rapidly in proportion to the length of the circuit, and the loss of heat through the pipes, which are always of large diameter, must be considerable; but, if the rooms be numerous, and at a great distance from the generator, a system of warming by steam alone, or by steam and water without circulation, is preferable, on account of the ease with which the heat may be distributed, and the slight degree of cooling to which the small pipes would be exposed.

It was formerly believed that, when it was required to maintain a constant temperature by day and by night in a room, warm-water stoves must necessarily be employed, because it was supposed that the great quantity of heat contained in the mass of water in circulation, whose rate of cooling is slow, would maintain the temperature even when the fire was allowed to go out. But when the walls of the building are thick, and they have been once brought to the normal temperature, they contain an infinitely greater amount of heat than the hot-water pipes, and therefore must act to a much greater extent to maintain the requisite uniformity; and that this is actually the case is proved by the experiments previously recorded, especially by those made in the church of St. Roche, which prove how slowly the internal temperature decreases after the warming has been discontinued. Warm-water stoves are, therefore, only really necessary when they are required to warm the air constantly by night as well as by day, and the fires are to be let out at night; and even under these circumstances warm-water stoves heated by steam may be substituted, without inconvenience, for warm-water stoves heated by circulation. Under any circumstances, the formulæ, to be given hereafter, will furnish the means of calculating approximatively the necessary heating surfaces.

Ventilation.—The means of producing ventilation are less numerous than the means of warming, for it can only be produced by the draught of a chimney, or by a machine. Under any circumstances, the air required for house ventilation must be brought to a proper temperature by stoves. When the volume of air so warmed is considerable, the heat which escapes through the walls and the glass may be replaced by an excess of temperature in the air brought into the room; but when its volume is small, it would occasionally be necessary to raise its temperature to an inconvenient degree; and then it would be advantageous to compensate for the loss of heat by transmission, or by the radiation from stoves warmed in any manner found to be most advisable.

Ventilation by Means of an Upcast Shaft.—An upcast shaft is a vertical channel open at both ends, communicating at its lower extremity with the space from which the air is to be extracted, and in which the air is heated. The space thus warmed and ventilated communicating with the atmosphere by the orifice which conducts the external air into the stove, the movement of the air is produced by the ascentional force of the heated portion occurring between the orifice and the extremity of the chimney. In the part of the year when there is no occasion for warming, and when the internal temperature differs but little from that of the exterior, the action of the shaft is produced simply by the slight excess which may then exist. In winter, the ascentional force of the air in the chimney is produced by the excess of temperature of the air it discharges over that of the external atmosphere, and therefore the former does not require to be very much heated in order to produce the same effect as in summer; and so distinctly is this the case, that if the air in the upcast shaft were not at all heated, it would still produce a decided effect, in consequence of the ordinary excess of the internal temperature over that of the exterior. During summer, therefore, the air of upcast shafts requires the most to be heated, in order to produce the same effect as usual; and the conditions of draught of chimneys of this kind require to be calculated with reference to the summer ventilation.

If we consider the case of a shaft drawing at its lower extremity external air through channels of a greater or less length, its action, which results from the excess of its temperature over that of the

external air, constitutes a constant force from below upwards, which augments with the temperature and the height of the chimney. But this force can never produce its full effect, on account of the friction of the air in the chimney, and in the channels which give access to the external air, and particularly on account of the resistances produced by the variations in the sections, and the abrupt changes in direction in the circuit; or, in other words, the real effect produced by an upcast shaft is equal to the normal effect, minus the proportion absorbed in overcoming the resistances.

Let us examine, firstly, the influence of the height and of the resistances, preserving throughout the following calculations the French system of measures and the centigrade thermometer.

Whatever may be the length of a channel, its sinuosities, its variations of section, &c., the resistance the air will encounter in passing through it may always be represented by that of a channel having a section equal to that of the shaft, and a certain length. We may, then, consider the cases in succession of chimneys of 1 mètre in sectional area, containing air at 30°; that of the atmosphere being at freezing-point, or zero, and having heights of 5, 10, 15, 20, 25, and 30 mètres; and that the air is drawn through a channel of 1 mètre in area, and of 0, 10, 20, 40, 60, 100, and 200 mètres in length. If the coefficient for friction be taken at 0·00125, which appears to be correct from the experiments of MM. Daubsson and Gerard, the following results* will be ascertained by the usually received calculations, the first numbers corresponding evidently with the case in which the external air is drawn directly into the chimney:—

Height, 5 mètres; theoretical velocity, 2·95 m.
2·79 m., 2·52 m., 2·32 m., 2·04 m., 1·83 m., 1·57 m., 1·20 m.
Height, 10 mètres; theoretical velocity, 4·18 m.
3·74 m., 3·42 m., 3·17 m., 2·80 m., 2·53 m., 2·17 m., 1·68 m.
Height, 15 mètres; theoretical velocity, 5·12 m.
4·37 m., 4·02 m., 3·75 m., 3·33 m., 3·03 m., 2·61 m., 2·22 m.
Height, 20 mètres; theoretical velocity, 5·91 m.
4·84 m., 4·48 m., 4·19 m., 3·76 m., 3·43 m., 2·97 m., 2·33 m.
Height, 25 mètres; theoretical velocity, 6·60 m.
5·20 m., 4·84 m., 4·55 m., 4·15 m., 3·76 m., 3·27 m., 2·59 m.
Height, 30 mètres; theoretical velocity, 7·24 m.
5·49 m., 5·14 m., 4·85 m., 4·60 m., 4·20 m., 3·64 m., 2·86 m.

As the common section of these shafts has been assumed to be equal to 1 mètre square, the above numbers represent the volume of the cold air they abstract. It follows, from the inspection of these numbers, that the draught of an upcast shaft increases with its height, and that its effect increases with the resistances to be overcome. Take, for instance, the shafts of 30 and of 15 mètres high; when they draw the air directly from the exterior, the velocities of the draught are in the ratios of 5·49 to 4·37, or as 1·25 to 1; and, when they draw air through a channel 200 mètres long, the velocities are 2·86 and 2·22, or in the ratio of 1·29 to 1. It follows from this that, as the height of a shaft is the element of its draught, which entails the least original or subsequent outlay, such shafts should be made as lofty as possible.

The influence of the temperature may be next examined; but it may at once be observed, that in the same shaft the ratio of the real velocity of the draught to the theoretical velocity is a constant number, which depends upon the dimensions of the chimney, and of the channel which supplies the air, and which is entirely independent of the excess of temperature of the air in the chimney; consequently, the influence of the variations of temperature is the same in all shafts.† Now, it is found that for excesses of temperature of

10°, 20°, 30°, 40°, 50°, 60°, 70°, 80°, 90°, 100°, 200°, 300°, 400°, 500°,

the velocities of access of cold air are proportional to the numbers

3·05, 4·17, 4·93, 5·51, 5·98, 6·35, 6·66, 6·92, 7·13, 7·33, 8·17, 8·27, 8·13, 7·92.

These numbers increase very slowly, and beyond 300° they diminish, for a reason which is easily explained. In fact, the velocity of discharge of warm air through the upper extremity of the chimney increases with the excess of temperature, and proportionally to the square root of that excess, so that the volume of the hot air discharged per second increases constantly with the temperature; but this air becomes more and more dilated, and, in order to deduce from it the volume of air which enters the chimney, it is necessary to divide the volume of the warm air by a number which increases with the increase of temperature: consequently, the volume of cold air withdrawn increases less rapidly with the augmentation of temperature than the volume of hot air discharged; and, as for a small variation of temperature the velocity of discharge of the warm air increases less rapidly than the number by which it is necessary to divide it to obtain the corresponding volume of the cold air, it follows that beyond a certain temperature the volume of cold air must decrease.

From the numbers above cited it follows also that the effect of an upcast shaft can only be increased by a very considerable augmentation of temperature. If, for instance, the case of a shaft containing air at 30°, whilst that of the atmosphere is 0°, be considered, it will be found that, in order to increase the effect it could produce by one-half, the velocity must be increased in the ratio of 4·93 to 7·39: so that the air must be heated to 200°. It would be impossible to double the velocity, for at 300°—at which degree it is at its maximum—the velocity is only equal to 1·67 of that which exists at 30°. It also follows from what has been stated, that if a shaft of 30 mètres high contained air with an excess of temperature of 30°, and produced a certain ventilation, it would require—in shafts of the same section and under the same circumstances, but having respectively 25, 20, 15, 10 mètres in height—that the air should be, in each case, 35°, 43°, 60°, 95°, in order to produce the same effect. It would be impossible to secure this result, under any circumstances, with a shaft 5 mètres high.

In the preceding remarks, it is throughout supposed that the shaft would offer a section equal to that of the channel which leads the air to it, or to the sum of the sections of the partial channels. But, M. Peclet observes, if a larger sectional area were given to the shaft, this increase of section would produce an increase of draught, and the increase of draught so obtained would—as in the case of the increase produced by heightening the shaft—entail but a very small addition to the cost of construction.

(*To be continued.*)

* Calling v the velocity with which the air would enter the shaft if there were no friction; v', the real velocity of entrance; H, the height of the shaft; L, the length of the channel; D, its diameter; and K, the coefficient of friction; we have—

$$\frac{v^2}{2g} = \frac{v'^2}{2g} + \frac{(H+L)Kv'^2}{D}; \text{ from which } v'^2 = \frac{v^2 D}{D + 2g(H+L)K}; \qquad (a)$$

and, as $v^2 = 2gHat : (1+at)^2$, in which a is a constant number equal to 0·00365, and t represents the excess of the temperature of the air of the shaft over that of the channel, it follows that—

$$v' = \frac{1}{1+at}\sqrt{\frac{2gHDat}{D + 2g(H+L)K}} \qquad (b)$$

† The formula (a) gives

$$\frac{v'}{v} = \sqrt{\frac{D}{D + 2g(H+L)K}};$$

so that the ratio between the real and the theoretical velocities is constant, and independent of the excess of temperature of the air. The formula (b) gives

$$v = M\sqrt{\frac{t}{(1+at)^2}} = M\frac{\sqrt{t}}{1+at},$$

in which M is a constant number for the same shaft. So that, in calculating the values of $\sqrt{t} : (1+at)$ for the different values of t, numbers will be obtained which will be proportional to the real and the theoretical velocities of access corresponding to those excesses of temperature.

Correspondence.

GAS PURIFICATION BY HYDRATED OXIDES OF IRON.

SIR,—Will you permit me to avail myself of your columns to make a few remarks on a pamphlet containing a most unwarrantable attack upon me, which Mr. R. Laming has caused to be circulated among the gas companies, and of which, I think I may say, that I never read a more disgraceful, slanderous, and malicious publication. As far as I am concerned, there is scarcely a word of truth in it from beginning to end; and what facts there are, are so garbled and distorted, as to deceive those who are unacquainted with the subject. After the sacrifices I have made for Mr. Laming's benefit—which are considerable—and the hundreds of pounds I have lost by trying one of his crude schemes before I knew him so well as I now do, I did not expect such ingratitude as the publication of a malicious tirade as that which he has now circulated, for the purpose, I suppose, of trying, by traducing my character in a more public manner than he has hitherto done, and making himself appear an injured man, to induce some of the gas companies to use oxides of iron, which, he states, he can now make in such a way as to avoid my patent, but which, he must well know, are claimed by me, notwithstanding the ingenious but jesuitical manner in which he has made a quotation from my specification, and which, by being isolated, is made to appear to mean different to what it really does. I must therefore caution any persons who might be deceived by this statement, that, by using his so-called new method, they would be infringing my patent; and would have to pay to me, or my licencees, the moderate royalties required.

I have been advised to take no notice of this publication, but to treat it with the contempt it deserves by not replying to it, or by leaving it to be dealt with by my solicitor; but I have heard from so many quarters that Mr. Laming has, for years past, been endeavouring to blacken my character by such statements as he has now printed—and which, to some extent, may have been successful—that I have determined, once for all, publicly to state that his charges and insinuations to my detriment, both in his pamphlet and elsewhere—and especially that I knew the nature of his experiments at the Westminster Gas-Works before the date of my patent of 1849—are false and malicious; that most of them have been the subjects of arbitration or litigation; and that awards have always been in my favour, which I have written documents to prove, and which, I think, the following statements will corroborate:—

First—That I had been experimenting on purifying gas by oxides of iron for years before Mr. Laming came into the field; that in July, 1846, I commenced a patent for their use, as published in my deposit-paper of that date; that in the same year, and about *three* years before Mr. Laming began his experiments at Westminster, I patented a method of purifying gas by the muriate and the sulphate of the peroxide of iron, and which I have between that time and this very largely used, and which has for its base, and is the principal purifying agent, the very identical hydrated peroxide of iron now employed in all the gas-works; and which said oxides I have by agreement permitted Messrs. Laming and Co.

to use, on payment of certain royalties; and I maintain that this patent of mine is the first employment of hydrated peroxide of iron for purifying gas; and I have the written opinions of Dr. Miller and Mr. Cooper to this effect, obtained by my solicitors during my litigation with Messrs. Laming and Co., and from which, without going into the *rationale* and detail of the process, I quote the following paragraph:—"Mr. Hills, therefore, by carrying out the operations described in his patent of Aug. 11, 1846, really uses the hydrated peroxide of iron for purifying coal gas." Signed, WILLIAM ALLEN MILLER, M.D., F.R.S., Professor of Chemistry, King's College; and JOHN THOMAS COOPER, Consulting Chemist, Blackfriars Road. Further, I may say that I have, perhaps, the highest legal opinion that no one, without my consent, can use the said hydrated peroxide of iron for depriving gas of its sulphur, by any improved process, until the expiration of this patent. In fact, I consider that, as far as it relates to oxides of iron, my patent of 1849 is merely an improvement on that of 1846, and which carries out the use of the said oxides in a more efficient manner.

It is true that Mr. Croll procured a patent previous to mine, in which he mentions a plan of using oxide of iron; but that oxide is quite different to mine, and is useless for purifying gas.

Second—That the respective claims of Mr. Laming and myself were, in May, 1851, investigated for nearly two whole days by Mr. Benjamin Rotch, the eminent barrister, whom he had chosen for an arbitrator, when I proved to his satisfaction that my patent process of 1849 was quite different to anything previously practised by Mr. Laming; and Mr. Rotch gave his award that Mr. Laming had no right to it whatever, and from which award I quote the following words:—"In spite of the very talented and ingenious chemical special pleading Mr. Laming has lavished upon his case, &c. &c., I am of opinion that Messrs. Laming and Co. have no right to interfere with Mr. Hills in respect of the use of hydrated or precipitated oxides of iron in the purification of gas, as described in his patent of Nov. 28, 1849." Signed, BENJAMIN ROTCH, 1, Furnival's Inn, May 19, 1851.

After all this, I think it is perfectly unjustifiable for Mr. Laming to arrogate to himself, as he has in the heading of his pamphlet, the title of the inventor of the process; and whether gas engineers have, as he asserts (but which assertion I believe to be unfounded), ceased to regard me as the inventor or not, yet, at all events, Mr. Rotch, a man of the highest talent and scientific attainments, and most conversent with these matters, has, after a lengthened investigation, given his unqualified opinion that I am entitled to my patent process of 1849, and that nothing done by Mr. Laming can invalidate it.

As to Mr. Laming's French patent, of which he makes so much in his pamphlet, and which I never heard of until long after my process was published, whether it contains any process for purifying gas by oxides of iron or not, is quite immaterial to me, as it in no way invalidates mine for England; and, in conclusion, I have no hesitation in stating my decided conviction, that Mr. Laming neither has now, or ever has had, any process of any practical value, that really belongs to him, of purifying gas by oxides of iron. I speak with the more confidence on these matters because they have been the subjects of long and expensive litigation, and I have had the opinions of the highest chemical and legal talent I could procure; and I have all the written documents to prove what I have now stated. I am sorry to be obliged thus to come publicly forward to answer this most unwarrantable attack of Mr. Laming's, as I have no wish to do him an injury, whatever feeling he may have towards me; and I now willingly leave the merits of our respective claims to those interested in them.

Deptford Chemical Works, May 3, 1856. F. C. HILLS.

HANSOR'S OLEFIANT GAS COMPANY.

SIR,—The remarks made by you in the last number of the JOURNAL OF GAS LIGHTING, on Hansor's Olefiant Gas Company, that linseed oil cake is the nearest substance, in point of value as a gas-producing one, to Boghead cannel, may be affirmed as follow:—

Dr. Letheby, in the report given in the prospectus of the company, states that 2·5 cubic feet of Hansor's gas gave a light equal in illuminating power to nine spermaceti candles, and, *the company* state, at a cost of *one halfpenny* per hour: from this data, the gas will necessarily cost 16s. 8d. per 1000 cubic feet.

Oil cake will produce gas at the rate of 11,000 cubic feet per ton, 1 foot of which is equal in illuminating power to six candles; and, the value of cake being about £10 per ton, the gas would, after adding cost of manufacture, be little short of 25s. per 1000; but, taking the amount of light as the comparison in each case, this is about 15 per cent. cheaper than Hansor's olefiant gas.

Now, from an analysis by Dr. Fyfe, 1 foot of Boghead cannel gas gives the light of eight candles; and, as it may be made at about 6s. per 1000 cubic feet on a small scale, it follows, therefore, that this gas is only about *one-third* the cost per 1000 cubic feet of either of the above, and has more than double the illuminating power of Hansor's—or, to put the matter comparatively, a light from Boghead cannel may be produced, equal to either of the above, at a cost not exceeding *one-tenth of a penny per hour*. All these, however, sink into insignificance compared to an apparatus with which it is proposed to supply the British public, by an American of the name of Longbottom, styled the "British Portable Gas Apparatus Company."

In the prospectus, it is given with an air of sincerity that *one gallon* of the oil will produce 100 feet, of an illuminating power *three times* greater than ordinary coal gas, and leave *one gallon* of residuum! and this, by an "inexpensive chemical process," can be sold for about three times the original cost!

By the company's calculation of profits on 200 "machines," as they are called, I find that there would require 31,200 gallons of oil for the year, which would cost £1170; and, after taking therefrom the gas—which would in all probability weigh *two-thirds that of the oil*—there still remain 31,200 *gallons of residuum!* which, by this "simple and inexpensive" process, is made to realise to the fortunate shareholder the moderate sum of £3120. Surely Mr. Longbottom has been "communicating" through a "medium" with Winsor, or he must have risen from the dead!

I send you the prospectus, as a curiosity of its kind.

There is undoubtedly a great demand for small gas apparatus in places where gas cannot be obtained from the public company, not only for this country, but for exportation.

The nuisance produced from the distillation of coal may be overcome by judicious arrangements; and, so long as ordinary Newcastle coal keeps under 50s. per ton, and Boghead or other equally good cannel under £10 per ton, there are no other gas-producing substances which can compete with them.

St. Neot's, Huntingdonshire, May 7, 1856. GEO. BOWER.

METER PATENTS AND THEIR ANTECEDENTS.

SIR,—I am sorry to trouble you again respecting Mr. Edge's claim to priority of invention in dividing the gas passing through a meter into two portions, and measuring only one. My patent for this method is dated 1838; Mr. Edge's is dated 1842. My other patent, which Mr. Warner quotes in your JOURNAL OF GAS LIGHTING for April 29, 1856, is for dividing the gas into two portions, measuring only one, and ascertaining the whole when the two portions are subject to varying and different pressures: a very different thing from my first patent, or Mr. Edge's. You were good enough to give an extract from my specification of 1838 in your JOURNAL of May, 1850, which I should have thought would have set the matter at rest.

SAMUEL CLEGG.

Dover Cottage, Putney, May 6, 1856.

THE SUGGESTED INSTITUTION FOR GAS ENGINEERS.

SIR,—The valuable suggestions of Mr. Laurence Gomme, which appeared in the JOURNAL of February 5, as also your own offer of assistance and co-operation in the following number, are now fairly before the "gas world." It cannot be supposed that any one doubts the propriety of such a combination as that proposed; but still, like many other excellent projects, it may die in embryo, if some steps are not taken for maturing and further developing it.

I would for this reason respectfully submit the propriety of your bringing the matter definitely before your readers, with the object of establishing a "permanent institution," combining advantages similar in some respects to those sought by the "British Association," the "Institute of Civil Engineers," the "Literary" and "Theatrical" funds, the "Licensed Victuallers' Association," &c. &c., for the special benefit of professional men connected with gas interests.

I fear we shall have to wait some time for the "affluence and influence" of the profession to inaugurate this matter by convening a meeting, as Mr. Gomme suggests. The course most likely to bring the affair to a practical bearing will be, I think, to fairly ventilate, and invite discussion upon, the project in your JOURNAL; to have a provisional committee and treasurer, who will receive subscriptions towards preliminary expenses, and call a meeting of gas engineers and managers, to be held in London during the ensuing summer.

A YOUNG MANAGER.

SUGGESTIONS FOR AN IMPROVED COAL-GAS WASHER.

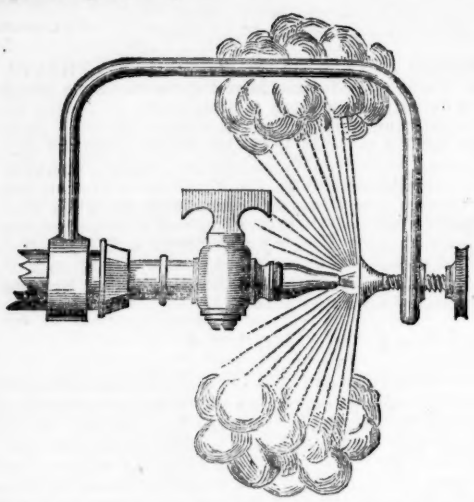
SIR,—I am afraid that I shall excite a smile upon the countenances of your practical readers when I direct their attention towards the new Houses of Parliament as a source of useful information. Many of them will, no doubt, conclude that for once I am inclined, "*coûte qui coûte*," to be jocular "à la Palmerston," and mean to create "*loud laughter*" by contrasting together the grotesque efforts of Sir Chas. Barry in the revival of mediæval barbarity and gingerbread architecture, with the astute endeavours of the Premier to centralise us out of that self-reliant system which is the very soul of English independence, and the only mediæval relic worth preserving. I have, however, no wish to enter into rivalry with the gay Viscount "*Cupido Senex:*" a man who can keep the benches of the Commons "in a roar," with Balaklava for a theme, will not easily find an imitator. No, my object is simply to point out an exceedingly beautiful invention, and to suggest its application to a variety of purposes for which it seems well adapted.

Few, perhaps, of the thousands who have listened in the gallery to the melodious bursts of eloquence which start from all parts of the House of Commons during a debate, are aware that it is no common atmospheric mixture which generates these glorious sounds: such, however, is the fact, and I am now about to disclose a grand secret that may explain how an individual, no way re-

markable for either wit or eloquence "out of the House," can, nevertheless, by comparison, maintain a very respectable figure "within" it.

Here is my secret:—All the air which enters the lungs of our senators, when engaged on the business of the nation, is sublimed, refined, filtered, warmed, moistened, mixed, and attempered to that exact Ciceronian pitch found long ago native on the shore near Athens by Demosthenes, where the sea-spray, no doubt, performed a duty similar to that which I shall presently describe.

Passing over the refining, warming, and mixing processes, I will at once proceed to explain how the air, before reaching its ultimate honourable destination, becomes charged with moisture, so as to assume a condition of hygroscopic neutrality, and thus take on the due pulmonary status; but first let me mention the name of the inventor. When time shall have eradicated the envy of existing competition, and the present generation be judged of by the impulse it has given to human progress, rather than by the mere money it has amassed, few on the page of honest utility will occupy a more favourable position than Mr. Goldsworthy Gurney. In comparison with what he has done, that to which I now allude is, indeed, a trifle; but such as it is he invented it, and thus I have attempted to figure it to you.



Opposite to the opening of a small jet is shown a little disc, about one-fourth of an inch in diameter, which is removed from the end of this jet to the extent of about one-fifth of an inch, or as much farther as may be necessary, by means of a micrometer screw attached to the disc. The jet is provided with a stop-cock, placed at any convenient part of a long perpendicular pipe, the height of which must not be much less than 30 or 40 feet, so as to produce, when filled with water, a pressure of about 15lbs. to the square inch, and the upper part of the pipe must communicate with a reservoir of water. Matters being thus arranged, we turn the stop-cock so as to cause the water to rush with great violence against the disc, in consequence of which the fluid is divided into the most impalpable spray, and exposes the largest possible surface to the action of the surrounding air. Mr. Gurney's name for the effect thus produced is "Scotch mist," and nothing can be more appropriate. Of course, the air mingled with this "mist" becomes immediately saturated with moisture, and thus far is suitable for parliamentary purposes.

But my object is to suggest its use as a purifying agent for coal gas: it might be applied in the condenser, or in a kind of scrubber, before or after purification by lime or oxide of iron, and the same fluid might be applied over and over again if thought necessary; or the ammoniacal liquor itself might be used, or dilute acids, or saline solutions, or, in fact, any soluble substance capable of purifying the gas, or producing with its impurities a marketable or useful substance. As a means of condensing tarry vapours, this jet ought to be much more effective than any scrubber, and most especially so for cannel gas.

I have not, however, done with Mr. Gurney's "Scotch mist," as it offers to be useful in many respects: thus, it would condense the muriatic acid given off in making sulphate of soda or salt cake; the nitric vapours formed in making oxalic acid, and purifying the precious metals; and it would advantageously replace steam in making oil of vitriol. Many oils and fatty substances being heated, might, by the aid of this jet, be brought into contact with oxygen, and bleached or deodorised. Foul water, alum liquor, sulphurous solutions, and other similar fluids might also be oxidised and purified. Vinegar, too, might in this way be formed from fermenting or fermented liquids; and even the foul air of our sewers would be improved by being "*mistified*" a little with water alone, or containing a portion of chloride of lime or soda, or sulphurous acid.

In short, the uses of this simple invention are manifold, and no difficulty could exist in making jets, discs, and pipes of glass, earthenware, or other material suitable to the work in hand.

In concluding this misty subject, I trust that some of the readers of the JOURNAL OF GAS LIGHTING will be among the first to dissipate the cloud that hangs over its utility, by practically showing how gas, at least, may be "Gurneyfied" with advantage.

L. T.

Register of New Patents.

2432.—ALFRED VINCENT NEWTON, of 66, Chancery Lane, in the co. of Middlesex, mechanical draughtsman, for "*Improvements in the manufacture of gas.*" Oct. 31, 1855.

This invention has for its object the production and carbonisation of hydrogen gas, and consists in certain details and improvements to obviate the objections to which the methods heretofore adopted have been liable.

Gas generated and carbonised in the manner about to be described, when first evolved contains moisture, which it deposits, shortly after it is formed, within the pipes in the immediate vicinity of the generator. This renders it necessary that the gas be drawn from the highest and driest portion of the receiver or holder, at the same time that the condensation be permitted to pass freely from the pipes.

To accomplish both these ends the eduction-pipe is caused to enter the side of a long vertical passage or pipe, open at its two extremities—one end being immersed in the acid, and the other opening into the upper portion of the receiver, whereby the gas is extracted from the driest part of the holder, where it is unaffected by the spray and effervescence of the gas-generating materials, and the condensation is permitted to pass from the pipes freely back to the generator.

Great difficulty has heretofore been experienced in introducing the zinc into the generator; the disagreeable odour of the gas, which escapes each time the cover is raised for the purpose, as well as the waste of that thus liberated, rendered it extremely desirable to effect this end without opening the generator or stopping its operations. This is accomplished by means of an endless chain of buckets, the lower portion of which is immersed in a water-chamber communicating with that which surrounds the upper portion of the generator—the upper part of the chain overhanging the zinc basket; by which means the metallic zinc may be introduced in such quantities as may be desired, without the loss of gas, and without stopping the operation of the generator. It also becomes necessary to introduce the acid and to draw off the liquid chloride of zinc, without opening the generator and without the use of cocks, which soon wear loose under the action of the acids; for this purpose a flexible tube is employed, which is ordinarily secured in an elevated position, and through which the acid is introduced. When it becomes necessary to employ the generator, it is simply necessary to depress the tube.

The vessel which contains the hydrochloric or other acid used in the production of the gas is cylindrical, and may be made of sheet copper or other suitable material.

The generation of the gas having been commenced, the gas as it rises passes through the naphtha which floats upon the surface of the acid, whereby it is carbonised, or sufficiently impregnated with the hydrocarbon to cause it to burn with a luminous flame; and the cover, together with the zinc basket, rises until the latter is above the surface of the acid, when the formation of the gas ceases. As the gas is drawn off the basket sinks, and fresh gas is evolved, the zinc being kept just in contact with the surface of the acid whenever the gas is being drawn off.

The claim is for—

1. Placing the hydrocarbon used to carbonise the hydrogen within the gas generator, or in immediate contact therewith, that the heat evolved by the generation of the gas may serve to maintain the requisite temperature in the hydrocarbon, as set forth.

2. Uniting the gasholder with the generator by means of the water space, when this water space, or packing, is placed sufficiently high above the bottom of the generator to enable the gas to be drawn off at a point above the surface of the acid, in the manner substantially as herein set forth.

3. The endless chain carrier, constructed and operating in the manner substantially as herein described, for the purpose of introducing the zinc without raising the gasholder, as set forth.

4. Opening the egress-pipe into the vertical pipe, in the manner substantially as herein described, for the purpose of drawing off the gas from the driest part of the receiver, at the same time that the gas-pipe is protected from the scum and foam upon the top of the acid, and the condensation is permitted to pass off in the manner set forth.

5. The elastic tube operating in the manner described, for the purpose of feeding the generator and drawing off the residuum without the use of cocks or valves, as set forth.

862.—PETER BANCROFT, of Edmond Street, Liverpool, in the co. of Lancaster, oil merchant; and STEPHEN WHITE, of Bond Street, Liverpool, in the co. of Lancaster, manufacturing chemist, for "*A method of manufacturing certain oils or oily substances from the petroleum commonly called 'earth oil,' found in certain districts of the Birman Empire and elsewhere.*" Dated April 10, 1856. Provisional protection obtained by the filing of a complete specification.

The petroleum, as imported, is put into a cast-iron still of the ordinary construction, having a spiral worm of copper fixed in the centre or body of the still attached to a steam-pipe passing out of the side, near the bottom part, and communicating with a steam boiler of the ordinary kind, capable of resisting a pressure of 60 lbs. to the square inch.

The still being charged with the crude petroleum, the first part of the distillation is carried on by the aid of high-pressure steam being passed through the spiral worm, passing through the contents of the still, until the most volatile parts, which are eupion, are drawn off; the steam so applied should be not less than 50 lbs. and not more than 60 lbs. to the square inch.

The purification is accomplished as follows:—The impure eupion is put into an open cistern lined with lead, and three gallons of sulphuric acid of commerce is then added to every hundred gallons of the eupion; the whole is

then thoroughly well agitated by a suitable agitating instrument for one hour; it is then allowed to settle for eight hours, after which time the sulphuric acid will have combined with the oxydisable portions of the impure eupion, and will have settled at the bottom of the cistern. The eupion is then drawn off into an iron vessel, and to 100 gallons of eupion is added 10 gallons of solution of caustic soda, s. p. 1·500°. The eupion and caustic soda so mixed are well agitated for one hour, and then allowed to repose for six or eight hours, when the caustic soda solution will have combined with other impurities and be deposited at the lower part of the cistern: the eupion will then be found floating on the surface; it is then drawn off, and put into an ordinary still of copper with a lead worm condenser, and it is therein rectified by means of a slow-fire.

The claim is for the method hereinbefore described of obtaining eupion, an oil which is termed eupion oil, and paraffine, from a certain petroleum commonly called earth oil, found in the Birman Empire and elsewhere, by the process of distillation, and other treatment and purification herein described. The inventors do not claim any of the apparatus which is described, or to which reference has been made, as used in those processes; all such apparatus being of kinds commonly known by the terms and descriptions which have been applied thereto.

PROVISIONAL PROTECTION

HAS BEEN GRANTED FOR THE UNDERMENTIONED INVENTIONS.

329.—James Meacock, of Snow Hill, in the City of London, gas-meter maker, for "*An improved means of fixing diaphragms in gas meters.*" Feb. 6, 1856.

912.—William Little, of the Strand, for "*Improvements in lamps for burning paraffine and bituminous oils or naphthas.*" April 16, 1856.

954.—James Hanson, of 2, Portland Place, Wandsworth Road, in the co. of Surrey, practical chemist, for "*Improvements in the manufacture of illuminating gas.*" April 21, 1856.

956.—John Thomas Stroud, of Suffolk Street, Birmingham, in the co. of Warwick, for "*Improvements in stop-cocks or taps for regulating or cutting off the passages of gas to combined gas burners.*" April 22, 1856.

960.—Alfred Vincent Newton, of 66, Chancery Lane, in the co. of Middlesex, mechanical draughtsman, for "*A new method of obtaining purified oil from coal, shale, or other bituminous substances.*" April 22, 1856.

NOTICES HAVE BEEN GIVEN OF INTENTION TO PROCEED WITH THE UNDERMENTIONED PATENTS.

2908.—David Dick, engineer, of Paisley, in the co. of Renfrew, Scotland, for "*A new and improved regulator for gas.*" Dec. 22, 1855.

912.—William Little, of the Strand, for "*Improvements in lamps for burning paraffine and bituminous oils of naphthas.*" April 16, 1856.

954.—James Hanson, of 2, Portland Place, Wandsworth Road, in the co. of Surrey, practical chemist, for "*Improvements in the manufacture of illuminating gas.*" April 21, 1856.

Legal Intelligence.

VICE-CHANCELLOR'S COURT,

April 24.

(Before Vice-Chancellor Sir W. P. Wood.)

RAMSAY *v.* PEASE—INJUNCTION

Mr. Rolt applied for a special injunction to restrain the defendant from making or selling any fire-bricks marked with the name of "Ramsay." The plaintiff (George Heppel Ramsay, Esq.) is a manufacturer of fire-bricks at Derwent Haugh, in Durham, and the defendant is also a manufacturer of the same description of article at Ruddy Moor and Wilton Park. The allegation in the bill was, that the defendant had made and sold a large quantity of fire-bricks stamped with the plaintiff's name; and that, as the plaintiff's bricks were of a very superior quality, the defendant's manufacture was calculated to do him injury.

Mr. Cairns said, that before his learned friend read the affidavits upon which he moved, he was quite willing, on the part of the defendant, to give an undertaking that he would not manufacture or sell any more bricks marked with the name of Ramsay.

Mr. Rolt said, that as a question of costs and account remained to be settled, he could not consent to any terms, unless the defendant agreed to pay all the costs of the proceedings.

Mr. Cairns said he was willing to accede to these terms, as his client felt that the plaintiff was justified as far as he had gone. The customer for whom the bricks had been made had only taken a portion, and 6000 had been sold to another customer, but the rest were in hand, and the plaintiff could have an account of the sales as far as they had gone.

The Vice-Chancellor: What is to be done with the remaining bricks?

Mr. Cairns: We will undertake not to sell them.

The Vice-Chancellor: Then Mr. Rolt had better take an injunction, a decree for an account, and an order to tax the costs.

Miscellaneous News.

THE METROPOLITAN BOARD OF WORKS.

Friday, May 2.

The board met this day in No. 1 Committee Room, Guildhall, the Common Council Chamber being occupied by the Corporation—Mr. Thwaites in the chair.

The minutes of the last meeting were read and approved.

SIR B. HALL AND THE METROPOLITAN BOARD.

The Chairman said he had been requested by the committee on the site of offices to apply to Sir Benjamin Hall, to ascertain whether the Government could assist the board in obtaining a suitable spot for the erection of the required accommodation. At that interview Sir Benjamin Hall had expressed a wish that, in reference to the main drainage of the metropolis, another test should be taken as to the flow of the tide in the river. He had every confidence in the accuracy of the tests already taken, but he thought, as the matter at issue was very serious, it was desirable that no chance of any mistake whatever should exist; and he suggested that the Office of Works should appoint one person and the Metropolitan Board another, who should follow the float in a boat. He (the chairman) thought such a course would be desirable. It was not proposed that the tests should be kept up for so long a period as on the former occasion, but it was thought that seven days would be quite sufficient to prove whether the results of the previous experiments were correct. He felt that, if the board would adopt this course, it would at once cause the Government to share the responsibility with them. The board could have no objection to have the tests taken, and then it would set that matter at rest for ever.

Mr. D'Iffanger wished to know whether it was proved that the float was the proper test?

The Chairman said, of course it would be seen that the proper test was adopted for the purpose; and they would have the benefit of Major Lyon's experience.

Mr. Dixon, as a "'long-shore" man, would like to know where the outlet would be, because in some places, whatever was thrown into the river would keep in that spot for ever. Before they went to test any float in the middle of the stream, they should decide that point.

The Chairman thought the general subject should not be discussed. The question was this:—Certain tests had been taken with great care and accuracy; but, in order that there should be no doubt at all about the matter, Sir B. Hall asked that the board would appoint some one who, in conjunction with a person from his office, should make fresh experiments for a limited time.

Mr. Offor could not object to the proposal, although he had great confidence in the old tests. At the same time, he was convinced that with two people for seven days, very little additional or corroborative proof could be attained.

The Chairman: There will be two by day and two by night.

Mr. Offor questioned whether that would be enough. But whatever Sir B. Hall and the chairman suggested, should, he thought, be adopted. He would therefore move that the board agree thereto.

Mr. Savage seconded the motion.

Deputy Harrison requested to have the terms of the motion read.

The Clerk read them thus:—"That the request of Sir Benjamin Hall be complied with—that is to say, that one person should be appointed by the Office of Works and one by this board, for the purpose of renewing the tests as to the flow of the tide for a limited period."

Deputy Harrison: Please read the request of Sir Benjamin Hall.

The Chairman: It is a request made through me.

Deputy Harrison: I desire to have the communication of Sir B. Hall upon the subject.

The Chairman: Probably you were not in the room when I stated the facts.

Deputy Harrison: Not doubting at all the accuracy of the statements made by the chairman, I want to know precisely how this matter comes before us.

The Chairman: The request by Sir Benjamin Hall is, that the several tests made by the late Commissioners of Sewers for ascertaining the flow of the tides in the River Thames, should be submitted to another experiment of seven days' duration, so that he may be able to approve or otherwise the proposal for discharging the sewerage at a certain point down the stream. He wishes that one person should be appointed by the Office of Works and another by this board, so that conjointly they may make the tests. Mr. Offer moves, and Mr. Savage seconds, that the request be acceded to.

Deputy Harrison: Mr. Chairman, I rise for the purpose of opposing any such proceeding on the part of this board. The effect, if we adopt the suggestion submitted through you will be this, that we shall be entirely paralysed in the course of our proceedings till these new tests are made, and the results have been reported to the board.

The Chairman: It will be only seven days.

Deputy Harrison: Our engineer, in preparing the plans which he has laid before us, has relied upon the tide-gauges and experiments made during the periods alluded to in Mr. Woolrych's letter to Sir B. Hall. These results are in print, and they will be submitted to the Chief Commissioner of Works when he has to examine the plans themselves. The scheme for the drainage of the south side of the Thames, which is already under discussion, is based upon those conclusions; and I warn the board not to raise any doubt upon their accuracy at this period, or to pause in their proceedings until the Government have satisfied themselves with respect to the correct mode of ascertaining the flow of the tides. The board has a duty to perform as well the Government; and the act of Parliament requires that we should propose certain plans for the intercepting sewerage, which, when prepared, we are to submit to the first commissioner for his approval. We have devoted a large amount of time to the subject—I have personally for years, having been on various commissions appointed to consider the question—and now I find we have a report from our engineer advising a certain scheme for the south side of the metropolis—a scheme which I believe, from the evidence of practical men of the highest standing, will perfectly answer the purpose. While we are in the midst of a discussion upon this scheme—a committee of the whole board having sat to consider it for some hours yesterday, and being about to sit again to-morrow—a communication comes down from the Crown which says, "Discontinue your discussion until the accuracy of certain tests have been ascertained;" and thus an obstacle is thrown in the way of our proceedings.

The Chairman: It is nothing of the kind. There is no desire to throw any obstacle in the way of this board. The test can clearly be taken without at all interfering with our proceedings, for we shall not terminate the discussion in seven days.

Deputy Harrison: Our calculations are based entirely upon the accuracy of former tests; and, if it is not true that the silt at Barking Creek is not conveyed a certain distance down the river at every tide, then the plan of drainage we have under consideration will not answer. The whole question depends upon the accuracy of those former tests; but it is now proposed that they shall be founded upon new tests; and therefore, though in so many words the Government do not ask that we should pause, they do so in effect. We must be foolish indeed to go on with the discussion of the question till the foundation upon which everything will depend is fairly before the board. Under these circumstances, having given so much time to it, I am prepared to go on with the question; and having decided to the best of our ability to lay our plans before the Government for their consideration; it will then be the duty of the first commission to examine into the accuracy and usefulness, and probable efficiency, of the plan; and until he has done that, we cannot proceed further. But it is for the Government, and not for this board, to make other experiments, we being satisfied already with the tests we have; and we believe our plans are based upon a sound principle. Let the board do their duty, and the Government theirs, and I cannot have a doubt that the result will be such as will meet with entire approval. We are appointed to do a certain work, and we are prepared to do it; but we are not

bound by the act of Parliament to appoint an officer to act with theirs in this matter; but when we are prepared to submit our plans to the Government, it will be for them to take such steps as may be deemed advisable to satisfy themselves of the correctness of our conclusions.

Mr. CRELLIN: I object to the motion on two grounds. First of all, I object to it because it goes on the assumption that the Government believes we have already adopted a particular plan for the drainage, whereas the matter is at present only under discussion; secondly, I object to it because the worthy deputy who has spoken takes the same view. Are we to be shut up to this precise plan, or else to have none at all?

The CHAIRMAN: We have not now to discuss any plans. The worthy deputy says that he differs from me on the subject of the tests already made; but that is not the case. I have the highest confidence in their accuracy, and I am simply performing a duty in bringing this matter before you. (Hear, hear.)

Mr. LESLIE: Holding myself perfectly free to give my opinion upon the plan when it comes before the court for the drainage of the metropolis, we ought to know something more about how those tests were made. It appears to me, from all the information I can obtain, that this matter was entrusted to two very able engineers, Mr. John Phillips and Mr. Betts, and those tests —correctly or incorrectly—were taken on the responsibility of those officers, both of whom were in high position in the late Commission of Sewers. It is just possible that Sir Benjamin Hall, as well as many members of this board, may not know the facts; but I believe they were taken in a variety of ways to ensure their accuracy. I should just like to ask whether it is correct that those tests were so taken by Mr. Phillips, the then chief engineer, over what length of time they extended, and whether there would be any objection to lay the results before this board with a view to our transmitting to Sir Benjamin Hall what information we can obtain on the question? Probably, when the first commissioner knows the manner in which they were taken, he may be satisfied without any further experiments.

Mr. WOOLRYCH said the tests were taken in 1851, during the periods named in the chairman's letter to Sir Benjamin Hall, extending over some three months.

Mr. LESLIE: Did not Mr. Phillips and Mr. Betts personally superintend those experiments, following the float in a boat?

Mr. WOOLRYCH: They did.

Mr. LESLIE: For how long continuously?

Mr. WOOLRYCH: For nearly a month each time.

Mr. LESLIE: And they were our chief officers, at large salaries. I am sure if Sir Benjamin Hall knew this he would be satisfied with the tests, at all events in the present stage of the proceedings. I think, therefore, all the information we possess should be printed, for the information of this board and the Office of Works.

The CHAIRMAN: I think my letter to Sir B. Hall sufficiently explains the position we are in.

Major LYON: I do not at all understand the interference of Sir B. Hall at this time. If he has no further information than what he tells us of, namely, that he sees by the public prints that we have a scheme for the drainage of the south side of the metropolis before us, he cannot be in a position to judge fairly of the matter. It looks to me very much like some side-wind—some little interference by parties not perhaps in this board, but outside. (Hear, hear.) I think we had better be left alone to work out our own plans. Doubtless it might be valuable if the Government would make certain tests, but those tests would be more valuable if they made them without us. If we agree to this proposition, the officer whom they send to meet us will be the leading man, and we shall be led by the nose, however clever our engineer may be. Suppose, when this is agreed to, some other member of the Government rises up and suggests some alteration or experiments as to the size of the pipes, we shall then be sent to France, or Italy, or somewhere else to endeavour to satisfy their fresh request.

The CHAIRMAN: I hope the Major will not raise the question as to the size of the pipes.

Major LYON: No, but we may have this to do. In the present case there is this important element which must not be lost sight of, viz., that in the tests already taken the float was followed for a whole month.

The CHAIRMAN: For three months.

Major LYON: And now we are asked to appoint officers to follow it for a week! There appears to me to be something in the request which I do not understand. Upon principle I now must vote against the motion, as I fully expect, if this point is conceded, we shall have some other point raised by some other member of the Government; and the progress of the proceedings of this board, as of former commissions of sewers, will be retarded by such interference.

Mr. SNOW said he regretted that the communication had been made, and did not believe that, if the request were acceded to, it would be satisfactory. What would be the effect upon the float in the river, supposing at the time chosen the wind set in strongly from the east? A week surely would not be sufficient to confirm or contradict the evidence they already possessed, and therefore he hoped the motion would be negatived.

Capt. BARNETT: This is a question of great importance to this board. I should like to know whether the experiments in 1851 were continued during the night as well as the day?

Mr. WOOLRYCH: Yes.

Capt. BARNETT: Then nothing can be more satisfactory. To compare such tests with any which could be made in one week would be folly.

Mr. HOWS thought it would be well to supply the Government with all the information in possession of the board, and let them make whatever tests they pleased in the matter.

The CHAIRMAN: I have already given the Government every facility for ascertaining the nature and correctness of the tests taken. It is for the board now to say whether they are satisfied with those tests; whether they think further experiments for one week would suffice to demonstrate their correctness or otherwise; or whether they consider the Government, if not satisfied, should make their own tests. It is entirely for the board to take their own course. (Hear, hear.)

Mr. TURNER said, he thought there was an undue feeling of jealousy about the Government in this matter. If it were true that suggestions had been made to the Government by parties who were interested, and were desirous of thwarting the operations of this board, these trials, supposing the former ones were correct, would only issue in their confusion. Certainly, if he felt, as the deputy appeared to do, that by agreeing to the suggestion they would be obstructing the progress of their works, he would go along with him in his opposition to the motion. He did not consider that these tests at all touched the principle of the plan they had before them, and that it would at all interfere with their discussion of them. Supposing, as the result of further experiments, it should turn out that between spring and neap tides the float should be carried some feet higher up the stream than they now understood, the principle of their plan would not be affected; it would simply require that their outlet should be a little lower down. As the matter was one of exceedingly small importance and expense, and as the Government wished it to be done, he thought they might safely let the Government have their own way. Another reason why he supported the proposition was, that he believed it would effect a saving of time in the end. If the experiments went on now, and the Government were satisfied, they would be in a position to accept the plans of the board as soon as they went before them. On the other hand, if the board set the Government at defiance, they would do nothing till the plans were before them, and then time would be consumed in making the very experiments they now asked for.

Mr. SAVAGE said, the only difficulty in the matter seemed to be whether seven days were enough. Of the reasonableness of the request of Sir Benjamin Hall he had no doubt; and, if acceded to, much good might, and no harm could, arise from it. Of course the board might or might not receive the suggestion; but was it worth while to set themselves up in opposition to the Government and the public? If the former tests were correct, so much the better; if not, by all means let the inaccuracies be ascertained, and the delay in doing so was of no importance.

Mr. H. L. TAYLOR: I differ entirely from Mr. Savage with respect to the time. The time is not a question of very much consequence, in comparison with another which arises in connection with the subject now before us; it is the question of principle. What have we been called into existence for? Why, to carry into practical effect that which has been so frequently boasted of, not only by Sir Benjamin Hall, but by that important borough which he represents—local self-government. What is local self-government? Is it that you are to place yourselves, bound hand and foot, entirely in the hands of the Minister, that he may dictate to you who have been elected by the metropolis at large, and require you to do at his bidding just what he pleases, whether it be necessary or not? Is it for him to judge whether the course you are taking is proper? or are not you sufficiently able to form your own opinion as to what should guide and regulate your conduct in reference to the drainage? Why the fact of so preposterous a proposition as this emanating from the Minister proves that he is entirely ignorant of the question; for, as has been already remarked, to put the trial of a float for seven days in comparison with the test for three months is absurd. Why, what would be the result?——But Sir Benjamin Hall does not care about the result; all he wants is to prove this, that he has got the Board of Works entirely under his thumb, and that they are, at his bidding, to do what he pleases. Is that the course which an honourable and independent man should pursue? Is that independency? Is that local self-government? If it be so, then, for my part, the sooner I retire from this board the better. I can only say that, while I continue a member of this board, no Minister in the position of Sir Benjamin Hall, whatever his views may be, and whatever his feelings may be, shall ever override my judgment on any question which shall come before me. (Hear, hear.) I hope that will be the feeling of every man here who professes to be an Englishman, and who is in favour of local self-government. With reference to what the honourable member for Hampstead has said about a feeling of jealousy towards the Government being created, why, he would ask, what right has the Minister to suppose that this board will not do its duty? Has there been any evidence shown as yet to lead him to believe that we are not competent to discharge the functions which we have been elected to perform? No; and yet, as I learn from the public press, and from a document placed in my hands just now, Sir Benjamin Hall does doubt the wisdom, and does doubt the judgment, of this board. What right has he to do so? Because he happens perchance to be in a position which he may not long retain. Who knows what the result of another month may be? A change of Ministers may take place, and Sir Benjamin Hall's office be filled by some other man, with altogether different views. He has shown, by deeds if not by words, that he does not place implicit reliance in the judgment of this board; and I find that not only does he doubt the judgment of the board, but, if the press states that which is correct—and there is a paper, called the *Observer*, which professes to record the sentiments of some members of our body, though I will not do my friend Nicholay the injustice to ——

The CHAIRMAN here interposed, and said it is sometimes very difficult to say how far matters introduced into an honourable member's speech are relevant to the subject under discussion, and even in the present case the last speaker may trace some analogy; but I ask him whether it is right now to open any question of real or imaginary grievance between us and Sir Benjamin Hall? (Hear, hear.) The first commissioner has said in effect, "You, as a new board, have not made any tests; nor has the Government made any test. My duty is to sanction the works which you propose to execute. Is it not, therefore, necessary that you should make some experiments as to the ebb and flow of the tides?" Well, I think the Minister might say thus much without its being supposed that he wished to override the deliberate opinion and action of this board. (Hear, hear.) I submit, therefore, whether it is quite fair for the honourable member for the City to go so far as he has done.

Mr. H. L. TAYLOR: I thank you, Sir, for the kind manner in which you have made your observations, but I cannot retract one expression in reference to Sir Benjamin Hall, because it is my belief that they are true; but I will not go further into the matter if you think it is irrelevant to the question. I was simply endeavouring to show, from the expressed sentiments of Sir Benjamin in reference to this board on another question—viz., that of Hampstead Heath——

Mr. TURNER rose to order, and to offer an explanation on that point.

The CHAIRMAN said, I really must protect this board from either honourable member having a canter on Hampstead Heath this morning. ("Hear," and a laugh.)

Mr. TAYLOR: I will only, then, say, that after the remarks made by Capt. Barnett and Major Lyon, I do hope this board will take an independent course. If you think it well to make the tests again, by all means do so, but do not have the Government man with you. If you agree to the motion of to-day, it will be like the letting in of water; it will admit a principle which, if Sir Benjamin Hall or his successor is foolish enough to follow up, may lead to the total destruction of the utility of this board.

Mr. WILKINSON had intended to give a silent vote against the motion; but the observations of the last speaker had wrought a change in his mind, and compelled him to decide to acquiesce in the proposition. It appeared to him that Sir Benjamin Hall had taken the most legitimate and courteous mode of asking the board to concur in what, in the discharge of his duty, he felt to be a necessary step to ensure the efficiency of the great drainage scheme. It was, therefore, most impolitic and ungracious to take this opportunity to indulge in a tirade against the first comissioner.

Mr. WARE, interposing, said, if Sir Benjamin Hall is to be defended by the honourable member, I shall claim the right to answer him.

Mr. WILKINSON said his object was not to defend Sir Benjamin Hall, but simply to show that the board was not necessarily throwing itself bound hand and foot into the power of the Government by acceding to the request which had been laid before them. Although he did not think the present was the proper time to make these experiments, he felt bound to support the motion,

in order to show to Sir Benjamin Hall that the board did not indorse the assertion of motives which had been imputed to him. It appeared to him that the mode in which the proposed tests should be taken would depend upon future circumstances, for the motion did not go the length of defining how they should be conducted.

Mr. DOULTON would only say that he could not account for the extraordinary speech of Mr. Taylor, except on the supposition that he was entirely ignorant of the nature of the application. It certainly appeared to him that there was not one word in it which could be construed into an attempt at dictation to the board; but, knowing that the board had to send to him their plans for the drainage of London, Sir Benjamin Hall asked that they would consent to make certain experiments now, rather than when the reports came before him for approval, when delay, to say the least, would be occasioned.

Mr. D'IFFANGER thought that the request showed an anxiety for the well-working of the board, rather than an undue interference with their prerogatives. He regretted that any gentleman should have consented to utter such severe remarks on the subject. It almost confirmed the opinion that had been expressed, that the City members were opposed to Sir Benjamin Hall.

Deputy HARRISON rose and asked the protection of the chair, as he was not permitted to reply to the last speaker. The remark just uttered was unfounded in fact, and he called upon the chairman to obtain a retractation.

The CHAIRMAN said, I think, however ardent we may be in discussion, we should be careful not to impute motives.

Mr. D'IFFANGER was willing to retract anything which he had stated wrong; at the same time he must say Sir Benjamin Hall had had motives imputed to him. (Interruption.)

The CHAIRMAN: I am quite sure that I interpret the feeling of the board in its desire that I should now put the question to your vote. (Hear, hear.)

Mr. TURNER asked, before the vote was taken, that he might say one word in explanation of a remark thrown out by Mr. Taylor, on the authority of the *Observer*, that on the occasion of the Hampstead deputation waiting upon Sir Benjamin Hall, that gentleman had used expressions derogatory to this board. He (Mr. Turner) was one of that deputation, and, to the best of his recollection, no such expression was uttered. (Hear, hear.)

On the motion being put—

Mr. OFFOR objected to the words "seven days," which he said were not in his proposition.

The motion was then amended as follows:—"That the request of Sir Benjamin Hall be complied with; and that this board do employ a competent person, and the office of Her Majesty's Works another, in order to test the tidal observations with reference to the sewerage interception on the south side of the Thames."

Mr. OFFOR said: The object I had in view in proposing this resolution was—not the mere showing of courtesy to the Government, nor yet to prove that this board was bound with red tape—but mainly to save time. If we go on with our project or plan, and present it to the Government without previously satisfying them of the correctness of our tests, they will take time to ascertain the facts, and thus cause a delay which may be of serious consequence. I submit to the board that, upon every consideration of sound policy and good feeling, we should show respect to the Government, and at once comply with that which has been asked. It has, I know, been stated that there was some error in the mode of taking the former tests; and I think, therefore, we are bound also to satisfy ourselves on the point—not that it will at all alter the principle of our plan, but merely cause us to take our sewerage a mile or two further down the river.

(In reference to Mr. Offor's remark, that there was some alleged error in the former tests, it was stated, at a subsequent period of the meeting, that the honourable member had satisfied himself that it was not correct.)

The CHAIRMAN again put the question, when there appeared—

For the motion	15
Against it	13
Majority	2

Mr. H. L. TAYLOR demanded a division, but the feeling of the board being against it, he withdrew his proposal.

IMPROVEMENTS IN HOLBORN.

A deputation from the Board of Works for the Holborn district was introduced by Mr. Seeley, consisting of the following members:—Mr. Baldock, Mr. Southee, Mr. Wm. Taylor, Mr. Stannard, Mr. Lindner, Mr. S. W. Hopwood (clerk), and Mr. Isaacs (surveyor).

Mr. BALDOCK presented the following memorial:—

TO THE METROPOLITAN BOARD OF WORKS.

The Memorial of the Board of Works for the Holborn District,

Humbly showeth,—That your memorialists have observed with great satisfaction that, by the formation of the Metropolitan Board of Works, the metropolis has obtained at last that which it has long needed—an authority to which is committed the duty of effecting those numerous improvements in widening narrow and insufficient thoroughfares, the want of which has long been felt in all parts of London.

That your memorialists perceive with pleasure that the attention of your board has already been directed to several important and extensive works, in opening new streets in several parts of the metropolis. At the same time, your memorialists would humbly submit that the construction of the 144th clause of the Metropolis Local Management Act seems to direct the attention of your board, in the first instance, to improvements which can be effected for less than £50,000, or less than £100,000.

Your memorialists consider it probable that the Holborn district will never make any large demand on the Metropolitan Board of Works for improvements to be effected within its limits. But it appears to be their duty to point out to the board several minor improvements of the most obvious character, which might be undertaken at once, and which your memorialists consider are of a class which the board might advantageously undertake at an early period.

1. Foremost of these must be placed the widening of the Holborn end of Chancery Lane. Few instances probably could be adduced, if a search were made through the whole metropolis, in which so important a good could be obtained at so small a cost. At the Fleet Street end, the City of London has recently expended a much larger sum to effect a widening which was not nearly so much needed.

2. Another street, which is nearly ruined by its miserable entrance, is Leather Lane. It is, for the most part, of a respectable width, and might be a good business street, were it not for a few wretched erections which make it almost inaccessible from Holborn. Here, too, as in the former instance, the outlay of a few thousand pounds would effect an improvement of very great value.

3. The entrance of Gray's Inn Lane from Holborn has been widened of late years; but there still remain a few houses which ought to be thrown back a few feet. If an improvement should be made in Chancery Lane and Leather Lane, it would be advisable to embrace the case of Gray's Inn Lane in the same schedule.

4. A much larger and more costly measure of improvement would be the removal of the block of houses which obstruct Holborn at Middle Row. The cost of their purchase would, no doubt, be considerable; but, when the extent of the injury inflicted by them on one of the principal streets of the metropolis is considered, your memorialists cannot doubt that before many years have elapsed your board will deem it their duty to remove this great blemish from a leading metropolitan thoroughfare.

5. Another important and not very costly improvement would be on the borders of your memorialists' district. A street leading out of Holborn into Lincoln's Inn Fields, opposite Featherstone Buildings, has long been called for by the general voice of the public. Your memorialists believe that such an improvement would be held by most persons to be well worth the sum of money which would be bestowed upon it.

These five cases constitute some of the chief demands which the Holborn district is likely ever to make on the funds of the Metropolitan Board.

Your memorialists therefore pray that your honourable board will be pleased to take the premises into their consideration, and, at an early period, widen and improve the streets, thoroughfares, and ways in the memorial mentioned.

The common seal of the Board of Works for the Holborn district was hereunto affixed, this 28th day of April, 1856.—By order of the board.

In reply to inquiries by Messrs. Taylor, Moreland, and Leslie,

The SURVEYOR of the DISTRICT said that he estimated the cost of widening Chancery Lane and Leather Lane at £32,000; for Middle Row, £83,000; and Great Turnstile. £37,000. The whole of the improvements would therefore be effected for £150,000.

The CHAIRMAN, after examining the maps and estimates, said that, whatever view the board might take of the improvements suggested, they would certainly give the local board credit for coming before them with such perfect and well-arranged plans. (Hear, hear.)

On the motion of Mr. SEELEY, seconded by Mr. SNOW, the memorial was received, and referred to the committee of works and improvements.

METROPOLITAN SUB-WAYS.

Mr. WILKINSON introduced a deputation, consisting of Messrs. George Parratt, Charles Wheatshire, T. Tyrrell, and J. W. Treeby, for the purpose of presenting a memorial relative to a plan for metropolitan sub-ways. By this plan it is primarily proposed to construct under the new street from Cheapside to Long Acre two sub-ways, each containing an up and down line of rails. On reaching Long Acre, it is proposed to continue one line under Long Acre, Leicester Square, Coventry Street, and Piccadilly, to Hyde Park Corner. The other line from Long Acre, under Endell Street, High Street, St. Giles's, and Oxford Street, to Cumberland Gate. Thus the two lines of sub-railway will proceed from Cheapside, side by side, under the new street to the corner of Bow Street and Long Acre, then fork or branch off to the northern and southern sides of Hyde Park. Contiguous to the sub-railways, and on each side, it is proposed to build chambers to hold the gas and water mains, telegraphic wires, &c., to be of such height that persons may pass along to move the pipes therein. The sewers may be constructed under these chambers, but apart from, and impervious to, the sub-way. On this point, and on the sanitary question involved, the memorialists say—

Great interruption to the existing traffic has occurred when the gas and water companies or the late Sewers' Commissioners were and are obliged to dig up the main highways, to touch their pipes or get at their sewers. By the proposed two chambers under the new street on each side of the sub-railway, but separated therefrom, the gas and water pipes and the sewers will be carried and passed along without interrupting the surface of the street above. This plan will effect a large annual saving to the adjacent parishes in cost of paving alone, as well as to the gas and water companies in leakage, corrosion of pipes, and facilities in getting at and moving their mains. The sewers can also be easily approached from the same chambers, as well as at the numerous stations along the railway, whilst no difficulty exists in keeping them well ventilated. These side chambers will enable another improvement of great public importance to be carried out, at an expense quite inconsiderable in comparison with that of any other plan which could be adopted. On these lines of route a system of telegraphic communication may, at a very trifling cost, be established, which might afterwards be extended to all parts of the metropolis, connecting together the various public offices, and bringing into immediate correspondence the commercial and private establishments of the City and West End. There has been matured a complete system of telegraphic communication for this especial purpose, through which, were it adopted, any public or private establishment might have the exclusive use of a magnetic telegraph between any two or more points in the metropolis or suburbs, on payment of a small annual rent, not exceeding £2 per mile per annum. In a sanitary point of view, the opening of a new street, creating an arterial current of air through the crowded City, the amended system of drainage, the rapid and cheap means of transport to our parks and suburbs—brought by means of the railway to the very doors of the citizens—and, finally, the means that would thus be afforded of relieving the crowded thoroughfares of a portion of their present traffic, are subjects, we consider, especially deserving of your consideration.

They also suggest that the new street might be relieved of a considerable portion of the deficit accruing from the cost of the property for the same, after sale of the frontages, by granting the concession in fee of the under portion of the street (at present without value to the public) for the construction of a sub-way; and by co-operating with the New Law Courts Committee, who, under the plan of Sir Charles Barry, are desirous of removing the courts from Westminster to this site.

After several questions were proposed to the deputation and answered, the memorial was received and referred to the works' committee.

MISCELLANEOUS BUSINESS.

The collectors presented lists of arrears on district sewers' rates, for which summonses had been obtained, and warrants were ordered to issue against defaulters. Certain deficiencies on district sewers' rates were allowed.

Numerous reports from the engineer, superintending architect, and the committee on the duties of the board under the Building Act, were read, and the consideration of them occupied the board for some hours.

Leave was given to the vestry of Rotherhithe to borrow the sum of £3000 on security of the district rates for the construction of sewers.

Leave was also given to the parishes of Paddington and Islington to construct sewers at Bayswater, near Hereford Street, and Highgate Hill, near the Archway Tavern.

The ENGINEER reported that he had received an application from the Equitable Gas Company, for the leave of the board to construct a pier near to the side of the King's Scholars' Pond Sewer at Lupus Street, Pimlico. He stated that this board possessed a right of way of six feet in width along the banks of the sewer, and he saw no objection to granting the application of the gas company during the pleasure of the board.

The CHAIRMAN said this was an important question, as the company asked for leave to build upon ground belonging to the board.

Mr. DENNIS asked whether they at present possessed the right of landing at the side?

The CHAIRMAN said, the company wanted to erect a pair of handsome gates; and, in order to obtain a larger space, they sought leave to build a pier.

Mr. WRIGHT thought the board could not give away any portion of their ground without something in the shape of a rent, if it were only a peppercorn.

Mr. BAZALGETTE said he apprehended the board had not the fee simple of the ground, but only the right of way.

Mr. DREW also thought not, except it had been by purchase.

The CHAIRMAN reminded the board that even that was a right of which they were trustees for the public.

Mr. H. L. TAYLOR inquired whether it was not a part of the bed of the river?

The CHAIRMAN: No; it is a right of way on the banks of the ditch.

Mr. WARE suggested that some special provision should be introduced in any written permission, giving the board the right of recal.

The required permission was then accorded, and the clerk was directed to prepare a proper form of agreement, so as to preserve the rights of the board.

The other reports call for no special record.

SOUTH METROPOLITAN SEWERAGE.

Mr. TURNER said the board having agreed to fall in with Sir Benjamin

Hall's request, he should like to know whether any proposition was to be made as to the appointment of the proper person to make the experiments on the part of the board. He thought it was desirable that it should be left to the engineer to recommend some one.

The CHAIRMAN said he apprehended that, prior to the next meeting, their engineer would be prepared with some recommendation.

Mr. CARPMAEL said that, supposing the committee came to a decision on the subject of the southern drainage the next day, he would give the requisite notice for bringing on the public discussion at the following meeting of the board.

Mr. DOULTON was surprised that it should be attempted to hurry the matter through committee, and would take every opportunity to oppose it. There could be no reason for pushing the scheme forward with so much haste at the present moment, especially as the Government and this board were about to make further tests.

The CHAIRMAN said, of course the board would not be able to deal with the question till the committee had decided upon it, and he thought that was sufficiently intimated in Mr. Carpmael's remarks.

The subject then dropped.

The cash account showed a total general balance of £151,274. 16s. 5d.

Several applications and communications were received, and the board adjourned at half-past four.

MONDAY, MAY 5.

The Board met at Greek Street this day, at twelve o'clock—Mr. THWAITES in the chair.

Much time was occupied in the disposal of summonses which had been issued against defaulters for sewers' rates, in the following districts, namely, Finsbury division, Poplar and Blackwall district, Limehouse Level, and upper Limehouse Level.

Several defaulters were summoned for not having conformed to the orders of the board as to works of improvement. The charges for default in the case of works which had in consequence been executed by the authority of the board were maintained, and payment insisted upon forthwith.

Improvement rates were then made upon a large number of premises, and the board then adjourned.

TUESDAY, MAY 6.

A special meeting was held at Guildhall this day, for the purpose of "considering and preparing a Congratulatory Address to her Most Gracious Majesty the Queen upon the restoration of peace." The requisition to the president was signed by 28 of the members of the board. The chair was taken by Mr. THWAITES, at eleven o'clock A.M. precisely.

Mr. WILKINSON, in introducing a motion to the effect that the board should present such a dutiful and loyal address to her Majesty the Queen as a restoration of the nation to the blessings of peace, after a comparatively short but severe war appeared to warrant, said he was glad to think that he should not have to meet with any difficulty, as the whole of the members of that board were aware of the fact, that the restoration of peace was one of the greatest blessings it was possible for the country to enjoy. As to the question of the justice of the war, the mode by which it was conducted, and the way in which it had terminated, they had nothing to do; and he was sure that in not entering upon such topics he should be carrying out the wishes of the court, as expressed by their chairman in the opening of the seal of that corporation. Although there might be some doubts in the minds of members of that board as to the *status* they might have in approaching the Throne, still he felt it to be his duty to declare it to be his opinion, that they had a position of that kind. They were a coroporation, and a corporation composed of the representatives of about 3,000,000 of the ratepayers of the metropolis and its suburbs. It might be true, that they had not the prescriptive right of the Corporation of the City of London to approach the Throne directly with their address; but he did think it to be their duty to evidence their loyalty to her Majesty upon an occasion of such rare importance as that of the restoration of peace to the empire. It might be said that, in taking such a step, they were expending the time and the money of the ratepayers. In the first place, he thought that in proposing the consideration of such an address, they were attending to the best interests of their constituents; and in the second, whatever money their attendance that day would cost, the entire sum would be defrayed individually by the members of the board who were present.

Mr. NICHOLAY seconded the motion. He said he agreed altogether with the remarks which had fallen from Mr. Wilkinson. He trusted that the motion would be at once agreed to, and that they should, without delay, present themselves to her Majesty with a loyal and dutiful address on the restoration of peace.

Mr. HOWS approved of the motion, and in doing so expressed a hope that no political allusions would be permitted in the address to her Majesty.

Mr. BIDGOOD thought the board were stepping out of their way very much indeed by entertaining the question at all. He, for one, must say that from the mover's statement he could not draw any satisfactory inference as to what course it was intended to pursue in getting the address presented, even if they had one. The fact was, they were not in a position to do anything of the kind proposed in the motion. They had to seek public opinion as an approval of the efforts they were making to improve the public streets and the sewers of the metropolis, and he thought that in the step proposed they were not strictly confining themselves to their duty. It was said that the object they had in view was not a political object. If not, he should like to know what object it was. The argument led to this—if he could make anything of it—namely, that without peace they could have no main sewers; or, at least, that peace was essential to their construction. There were not two opinions, probably, with reference to the advantages of peace; but that question was not the question for them then to deal with. Their duty was special—it was to carry out, to the best of their ability, the drainage work and improvement of the metropolis. What that could have to do with their going to the Queen on the restoration of peace he could not imagine. When they had, in seven or ten years' time, executed their mission and accomplished the main drainage of the metropolis, they might, perhaps, be in a position to go to her Majesty, and state that they had accomplished the work entrusted to them; but now he believed that any such attempt would be folly indeed.

Mr. DREW observed that there was no doubt but that the whole of them desired peace. The question was, whether they were duly qualified to go to the Queen to offer their congratulations, as proposed.

Mr. H. L. TAYLOR said he had refused to sign the requisition to the chairman requesting him to call that special court, because if he had done so he should have felt himself in some degree pledged to see that it was carried out. He (Mr. Taylor) wished to know, even if that board did agree to the preparation of an address, in what way were they to get it presented. They were not in the position of the Corporation of London in respect to approaching the Throne. They had no claim to go to the foot of the Throne with any memorial or address. The usual etiquette was, that the Monarch commanded all the addresses upon such occasions to be presented together, but for that they had not time, as her Majesty had named Thursday next for the reception. Then they would have to entrust it to a Minister, and to that course he strongly objected, as but little notice would be taken of it; the board would be placed in a false position, and more harm than good would be the consequence.

Mr. D'IFFANGER supported the motion.

Deputy HARRISON thought the board could not judiciously entertain the question, as it would necessarily involve the agitation amongst them of the political character of the war, which they were forbidden to do by their own regulations. He moved, therefore, as an amendment, "That the question be not now put."

Mr. BOYSON seconded the amendment.

Several other speakers followed, and eventually the motion was carried.

An address was then prepared, and unanimously carried; after which a committee was formed for the purpose of ascertaining from the Home Secretary the pleasure of her Majesty as to its reception, after which the board broke up.

FRIDAY, MAY 9.

The Board met at Guidhall this day, at twelve o'clock—Mr. THWAITES presiding.

The minutes having been read,

Deputy HARRISON expressed a wish that those records should be amended to the extent of inserting a notice of the fact that Sir Benjamin Hall wished the experiments as to the flow of the tides—on which he (the speaker) founded his opposition last week—to be made "for seven days" only. Without this being understood, the aim of his remarks would be liable to misconstruction.

The amendment was made and the minutes confirmed.

ADDRESS TO THE CROWN.

The CHAIRMAN intimated that he had received a communication from Sir George Grey as to the mode in which the address of the board to the Queen on the restoration of peace might be presented. It appeared that it could be done at the next levee, and he suggested that four members should be appointed to attend and present it.

Mr. LESLIE attempted to raise a discussion on the entire policy of the step, but it was ruled that he was out of order, and the conversation dropped.

Warrants against defaulters on district sewers' rates were issued, and certain deficiencies were allowed.

THE SOUTHERN DRAINAGE SCHEME.

The CLERK read the following report of the committee of the whole board on this subject:—

METROPOLITAN BOARD OF WORKS.

May 8, 1856.

Report of the Committee of the whole Board on the Report of the Engineer on the Sewerage Interception and Main Drainage of the Districts South of the Thames.

In compliance with the instructions conveyed by the resolution of the board of the 18th of April last, directing that the report of the engineer on the sewerage interception and main drainage of the districts south of the Thames be taken into consideration by a committee of the whole board, your committee now beg to report that they have met, and devoted much time and attention to the consideration of the subject referred to them, and have adopted the following resolution:—

"That this committee do recommend that the report on the sewerage interception and main drainage of the districts south of the Thames be approved"—

which your committee submit for consideration.

(Signed) J. THWAITES,
A. BRISTOWE,
HENRY BURSLEM.

On the motion of Mr. CARPMAEL, seconded by Mr. WRIGHT, the report was received.

Mr. CARPMAEL then moved that the report be adopted. In doing so it would be necessary for him, for a short time, to call the attention of the board to the facts——

Mr. TURNER rose to ask the honourable member to consent to postpone the discussion on the subject to an early day to be specially appointed for the purpose. (Hear, hear.)

Mr. CARPMAEL said it was most desirable that the board should go on with this question at once: a more important one to them and to the metropolis at large there could not possibly be.

Mr. TURNER thought it could be taken up on Monday; and the paper of business for this day contained so many matters of urgency which it was very proper they should at once dispose of.

Mr. CARPMAEL could not at all understand how any matters which stood on the paper of business could by possibility be put in competition with the one now under consideration.

The CHAIRMAN said the honourable member (Mr. Carpmael) was perfectly in order in moving the adoption of the report; but there was a question for the board to determine, viz, whether they would proceed with the matter or adjourn it, and take up the other business on the *agenda*. The principle they should act upon should be this—to conduct the business of the board with as little passing inconvenience to the public as possible. Now there were many applications before the board from builders and others, whose works were being stopped until the direction or permission of the board could be obtained. These matters required their early attention, and could not conveniently be postponed. On the other hand, nothing could be more important to the general interests of the metropolis than the plan for effecting the main drainage. The discussion of it would, no doubt, occupy the entire day, and even then be incomplete. It was for the board to determine whether, after Mr. Carpmael had submitted his motion, if he felt bound to press it, the question should be postponed to an early special day or not.

Major LYON said he was anxious to prevent loss of time, and the necessity for Mr. Carpmael reopening his case, by moving that the consideration of the report be adjourned till Wednesday next. (Hear, hear.)

Mr. SAVAGE thought it would be very inconvenient to take the discussion to day, with so much other business upon them.

Mr. H. L. TAYLOR said the object they all had in view was the transaction of public business with the least possible delay; and the question really was whether, by devoting their attention to this matter, to the exclusion of every other, they could get through with it. His opinion was that they could not, and therefore it would be better to postpone it till Wednesday next. Mr. Carpmael was quite willing, if it were the wish of the board——(loud cries of "Go on," and "Postpone.")

The CHAIRMAN said, after the strong expression of opinion on the part of the board, and with the conviction that great inconvenience would arise from the postponement of the general business, he must put it to the honourable member whether he would proceed. In point of order, he was strictly right in doing so.

Mr. CARPMAEL said, if the expression of opinion in favour of adjourning this question had been general, he would not persist; but as it was not, and as it appeared evident that some portion of their business must be postponed, he was not willing that the most important should be the part to give way.

("Hear, hear," and "Adjourn.") He had not taken any one by surprise in the matter, for he had all along intimated his intention to press the question forward for discussion at the earliest possible period after the committee's report.

A great deal of conversation ensued upon the point, many members urging the postponement, and a motion for the adjournment of the board was proposed, but, at the request of the chair, withdrawn. As, however, Mr. Carpmael persisted in his right to proceed, it was at length conceded.

Mr. CARPMAEL then said, he had expected from the timely notice which he had given of his intention, that he would have been permitted to bring on this subject without any opposition; but whatever might be the views of those who sought to postpone its consideration, they must know that the question must be dealt with by them, and that at the earliest possible period. In his opinion, no business now, or at any previous time before the board, was or could be so important, could involve so much of interest to the health and well-being of the metropolis, or in which so much was at stake, as the question of the main drainage. Acting on this persuasion, he would proceed as briefly as possible to draw attention to the principal facts of the case, and leave the board to determine the course they would pursue. The plan he had marked out for himself was this—he proposed to call attention to the present state of the sewerage and drainage of the south side of the Thames; then to analyse the plan which was more or less assented to by the late Metropolitan Commissioners of Sewers, and which was known by the name of Frank Forster's plan; and then to deal with the report of their own engineer. When he had gone through these particulars, he hoped and believed that he should have convinced the board that Mr. Bazalgette's plan ought to be adopted, and carried up to the Government at the earliest possible period for their approval. If he succeeded in getting the vote of the board in favour of this motion, he would immediately propose that a committee be appointed to accompany the chairman, with the engineer and clerk of the board, to wait upon the first commissioner, lay the plans before him, and obtain, as quickly as possible, his assent to their carrying on the work. In order to ascertain what steps ought to be taken, it was the first duty of the board to make themselves acquainted with what was actually required; and he apprehended that they would not be disposed to accept any plan which did not embrace works commensurate with the whole of the wants of the district south of the Thames. The act of Parliament did not remit to this board the duty of investigating what had been done for the better getting rid of the polluting effects consequent upon the flow of sewerage into the Thames, but it directly charged them to carry that sewerage to such a distance from the metropolis that there should be no chance of its returning to defile the stream as it passed through the town. He, however, was happy to have it in his power to say that, if the larger question had been remitted to them, it would have been his duty that day to advocate the adoption of the same scheme as he now submitted; and, as he would have in the course of his remarks to compliment their engineer and his work, he begged that it might go forth that up to the time he entered the board Mr. Bazalgette was an entire stranger to him. He was not, therefore, his advocate, but the advocate of the works which he had put before them. (Hear, hear.) The district south of the Thames, which the board was required to drain and sewer in the best possible manner, was composed of upwards of forty square miles. The conditions of that area were variable; the lower portions, commencing at Deptford and extending to Kennington, might be said almost entirely to be below the high-water mark of the Thames, and therefore required to be dealt with in the same way as they would have to deal with a portion of Holland or the Fens in Lincolnshire; and it was necessary, in order to prevent the sewerage running into the Thames, to resort to pumping. The other portion of the district lying around this was high land, and rose in many places to several hundred feet. Therefore the southern side of the metropolis, with which they had now to deal, might be described as a sort of half basin, having the Thames as its base. The portion included in the first part he had described, and which was marked blue on the plan, was provided or underlaid with a net-work of sewers, which net-work received during every eight hours the sewerage of the district, and remitted it into the Thames at several points during the other four hours; but, as the larger portion of the sewerage came down in the first six hours of the day, it had to lay in these sewers for four or five hours in a state of stagnation and precipitation. Then, assuming that the board would only deal with a plan which was commensurate with the whole of the evils they were charged to remedy, he would call their attention to the extreme limit of the district in one direction, viz., Putney. That part of the district, together with Battersea, Wandsworth, Clapham, Clapham Road, and Kennington, was sewered at the present time only by wide, pestilential rivers and streams, which, being themselves polluted, polluted the Thames wherever they entered it. If he could only get honourable members to follow the course of some of those streams, or of the Earl and other sewers further east, they would become as thoroughly acquainted with the disgusting nuisance they occasioned as he was himself. Now, in order to get rid of the sewerage of Clapham, Balham, Tooting, Streatham, Norwood, Dulwich, Sydenham, Camberwell, Peckham, Lewisham—all of which were largely drained or sewered by open rivers, ditches, and streamlets—there were facilities for making the sewerage gravitate down to a position as low as Plumstead, without the necessity of any pumping at Deptford. But, if the sewerage of the upper lands, as they now are, was mixed with that of the lower, as they now are, the whole would have, when taken to Deptford, to be pumped up to a high level before they could be conveyed to Plumstead. Having pointed out this fact, he would go on to the proposition which received more or less favour from the Metropolitan Commissioners of Sewers. The great bulk of the plans submitted to that board by a variety of people mainly applied to the northern drainage, but there were two which had reference to the Surrey side which received considerable attention. The one was that of Capt. Vetch, and the other that of Mr. Frank Forster. The latter was prepared at the direction of the Metropolitan Commissioners, after seeing all the other plans. Respecting that plan, he would confine his remarks to what was executed previous to their engineer's report. Mr. Frank Forster proposed to commence at Kennington, and to intercept the lower portion of the Effra, and then to convey that portion of the sewerage coming down from all the net-work of sewers in the lower district as far as to Deptford; but in doing so he proposed that his sewers should rise as high as the Grand Surrey Canal in proceeding from Kennington to Deptford. By that course of proceeding he would intercept a large quantity of sewerage and drain-water coming down from Peckam Rye and that part of the country, which would run freely by gravitation to Plumstead. Therefore, in his (Mr. Carpmael's) opinion, he carried much more than was desirable; but it was evident that he wanted to get as large an area within his grasp as circumstances would permit. In the course of the questions put by the committee to the engineer, the other day, it was stated that Mr. Frank Forster's was a complete system of drainage for the south side of the Thames. He (Mr. Carpmael) would venture to deny that proposition, and also to deny that the matter was ever submitted to that gentleman for him to propose such a plan. He was quite certain that no man could read his report without feeling convinced that Mr. Forster never pretended that he had made such a system of sewerage for the south side of the Thames as would complete the whole of the required works. On the contrary, his report contained internal evidence that he had left many things undone which required to be done; and therefore it was inconsistent with facts to say that it ought to be dealt with as a complete system. The late commission laid it down as a rule for the guidance of Mr. Frank Forster, that he was to have a descent in his main sewer of four feet to the mile. Now, the effect of carrying out a plan based on that principle would be this—and he (Mr. Carpmael) could not imagine, from that circumstance alone, that Mr. Forster would have acted upon it if he had intended his plan to embrace the whole district: a sewer rising in that way would come out of the earth before it got to Battersea; and the consequence would be, that all sewers running into the Thames above that point could not be intercepted in the slightest degree. He did make a system of sewerage complete in itself for all the lower districts; but he did not attempt—nor did he suggest that he had—to deal with the sewerage of the other parts of the district. Was that plan, therefore, one which this board ought to accept as the mode of dealing with the question at the present time? Imagine that this plan had been carried out at the time it was proposed, what would be the state in which the board would find itself at the present time, looking upon themselves as a body to whom it was delegated to intercept the whole of the sewerage of the southern side of the metropolis? They would have Putney, and Wandsworth, and Clapham, and Balham, and Streatham, to deal with entirely from the commencement. But, without pumping, they could not get the sewerage into Frank Forster's main sewers; and, even if they could, the dimensions would be insufficient to carry it down to Plumstead. They would have, therefore, to make a new main sewer, commencing with Putney and ending with Deptford, in order to intercept that portion which had been left unprovided for. Look, then, at the higher levels; what was to become of all the waters flowing down from them between Putney and Deptford? Mr. Forster did not deal with them at all, but he suggested with reference to the Effra the construction of a reservoir to collect the waters; and, by letting them out, to flush down that channel from time to time, leaving it, however, in its present open state to taint and pollute the atmosphere in the way which had been so often complained of. But, though he suggested the construction of such catch-water reservoirs, he went on to say that he must have the means of preventing all that net-work of sewers becoming flooded during heavy rains, and that that must be dealt with by a separate system. (The honourable member read extracts from the Parliamentary Report, page 21, in confirmation of his views.) Now he came to the report of their own engineer. Mr. Bazalgette proposed to modify that portion of Frank Forster's plan which carried the main intercepting sewer from Kennington to Deptford. He did not feel that he was tied to a four-feet fall in every mile; he said, "No; as an engineer, that is not the only string to my bow. The plan does not fall in with the requirement of the district, taken as a whole, and therefore I cannot use it." But engineers all knew that there was another remedy, viz., that by enlarging the dimensions of the sewers and decreasing the fall, they could get a delivery equal in every respect to the other mode. Mr. Bazalgette had with great propriety taken that second remedy; and he (Mr. Carpmael) believed, under the peculiar circumstances, it was the cheapest, the easiest of execution, and the least future costing plan; because, if he had gone with a fall of four feet per mile all the way from Putney to Deptford, he would have been so deep down in the bowels of the earth that the expense of pumping up the sewerage would have been tremendous. But Mr. Bazalgette had done this: he had attained the maximum delivery at the easiest cost, and the minimum future payment for pumping hereafter. He (Mr. Carpmael) considered that this was good and skilful engineering; and, to accomodate a somewhat cant phrase, was adopting the proper rule in the proper place. Commencing with Putney and ending with Deptford, he had been enabled to deal with all the tributary streams of sewers; to cut them off, to intercept them, to fill them up; and wherever a portion only of them was wanted, he could make small sewers to bring down the small quantity of material into the great intercepting sewers, leaving the water channels for delivering the rain-waters into the Thames; thus saving the necessity of having to carry more with him than he actually required. But there was a very important question, and he would have to say something about it when he came to speak of the ventilation of the sewer, and the dilution of the sewerage. The only objection he had heard to this plan was, that it did not provide for catch-water reservoirs, in order to draw water out of the Thames at high water, and then use it for the purpose of flushing the sewers. No; Mr. Bazalgette knew that he had only to open his flood-gates into the sewers whenever it suited his convenience so to do, and thus obtain all the benefit of cleansing the sewers and diluting the sewerage, so as to do away with the noisome condition in which it might be found. But he did this also, that, in place of the net-work in the lower districts being flooded during eight hours in the day, there was a constant outgoing and running down to Deptford at the rate of from two to three miles an hour. Passing then to the upper sewers, or high level which commenced at Clapham and was continued to Plumstead, without requiring any aid by pumping at Deptford, he would observe that, had Mr. Frank Forster's plan been adopted in its entirety, the lower districts would have been flooded in great falls of rain, for it was insufficient to provide for such a contingency. And not only would the districts be flooded, but the whole of the disgusting mass which came down with the waters would be spread through all the cellars of the houses, and in all open ditches and water-courses, and upon all the banks of every stream, to be operated upon by the sun's rays, carrying disease in all direction. Commencing at Clapham, and passing on to Plumstead, Mr. Bazalgette's plan intercepted the Effra in such a way as to enable him to fill in a large portion of it; he intercepted all other open sewers step by step; he collected all the outlying waters and sewers, preventing them from flowing into the lower districts; and then conveyed them by simple gravitation down to Plumstead. Mr. Bazalgette had a branch line down to Dulwich which was peculiarly situated, being in a basin, and was at the present time as badly drained as it was possible to imagine. That part of the district was perfectly inaccessible by Mr. Frank Forster's plan; but Mr. Bazalgette had very properly dealt with it by means of a branch sewer, so that the level being higher than that of Plumstead, although situate in a basin as to the surrounding neighbourhood, he was enabled by simple gravitation to carry the whole of the sewerage and land waters to the proposed point of outlet. He had, in fact, grappled with the whole subject; had intercepted every sewer; provided means for closing, filling up, or reducing the size of all those open ditches which were now so flagrant a nuisance, and which it was the duty of this board to deal with. He asserted, therefore, that the plan was completely suitable for carrying out the whole object they had had placed before them; and he did most fully believe that the board would never be induced to take up any plan or any system which would be wanting of the whole subject. This board was differently situated to any other board that had ever existed. They had the fullest power to tax the inhabitants, to take the land, and to perform every other act necessary to the efficient performance of the duty entrusted to them; to accept, therefore,

any plan which fell short of the entire object set before them would be to incur the certain disapprobation of the districts not provided for. He had not mentioned the low-level or Bermondsey branch, which, however, was one of the most important features in the plan, inasmuch as it passed through and relieved one of the most densely populated of the low-lying districts of the metropolis, where the present system was very defective, and fevers were at all times rife. Much had been said with reference to the question of the ventilation of sewers, and also as to the mode of dealing with the sewerage. He believed that, as to the first, it was acknowledged on all hands, that if the sewerage was largely diluted with water, or the vapours arising from it largely impregnated with atmospheric air, it would render any very large outlay for the ventilation of the sewers unnecessary. Mr. Bazalgette had carried his system to the largest practicable extent, so as to obtain the most complete result in this direction; but when that was accomplished, if it wanted more dealing with, it would be a question for futurity in what manner it should be done. But, assuming the plan carried out, the immense improvement effected would be such as to do credit to this board through their engineer. There was another question to which he would have to advert, and that was, as to that portion of the sewers which laid between Deptford and Plumstead. The engineer had, with great propriety, so dealt with it, again following out the proposition he had before enunciated, that of lessening the fall and increasing the diameter of the sewers, that he was able to avoid sinking very deep into the earth, and yet to get a most efficient gravitating sewer, by which he could take all the sewerage down to Plumstead, and there deliver it into the river, under any circumstances, within from two to four hours nearest to high water. As Major Lyon, he believed, proposed to go at some length into this latter subject, he (Mr. Carpmael) would merely tell the board the result of his own inquiries thereon. Let them bear this in mind, that whether as the results of further experiments they should prove the former tests inaccurate or not, this work must go on; because, whether this were the right or the wrong place for delivering the sewerage waters, they must at least go so far, though they might have to go further. But in his opinion, as an engineer, they had gone far enough; and it was a fortunate circumstance that in going to that spot, they could get an outfall even at low water; thus attaining the maximum result at the minimum distance. With regard to the float question, he would only say that, in his opinion, so far from its being a favourable test, it was the most unfavourable that could be devised for judging of the propriety of their engineer's scheme. The float was an indivisible mass, mainly governed by the surface stream and the wind. Sewerage was infinitely divisible, and if you could only get it to mix with the waters sufficiently, it did not matter where it went to, or where it came back to. If it were taken to Plumstead, and there delivered into the river, then for every gallon of sewerage there would be a thousand gallons of water to mix it with; and being mixed at high tide, it would go down the stream for eight or nine hours, mixing itself with the increasing masses of water till it was completely lost to perception. If, as at present, it were introduced into the river above London Bridge, the quantity of water to sewerage would be 180 to 1 as compared with 1000 to 1 at Plumstead. There was but one other point to which it was necessary to refer. It had been said by several persons, and it had appeared in the public prints, that this board was not giving the question of the utilisation of the sewerage that consideration which it ought to have; in fact, that they were entirely ignorant of the subject. Now he (Mr. Carpmael) could not plead guilty to this charge personally, because he had made himself acquainted with every scheme which had ever been proposed on the subject. He had been consulted also, he believed, upon the whole of them; and, though at present he did not know of one that would satisfactorily answer the end proposed, yet, as a member of that board, he felt bound to say that they ought to carry out their intercepting sewerage with reference to the future possibility of the utilisation of the metropolitan sewerage. If he, as an engineer, saw that the plans propounded by Mr. Bazalgette were such as to shut out the practicability of the useful application of the sewerage, when that could be done, he should feel it his duty to point it out, and to tell the board that it was defective in that respect. But he would state—and state with some degree of confidence—that the plans propounded by their engineer were the best suited in every way for utilising the manure, if it could hereafter be done. To utilise it you must collect it; to deal with it you must localise it, and so localise it that the cost of carriage to the places where it was to be used would be as little as possible. Now, by getting it to Plumstead, in a district inexpensive in value and probable cost, he brought the whole of the sewerage into the most available condition. If it could be precipitated, and the valuable decomposing materials separated from the water, there it was in the most convenient spot to be dealt with in the cheapest manner. He felt most confident that, if it could be shown that the sewerage material could be utilised, there were plenty of mercantile men who would find capital to purchase it, and bring it to account. There was, as he informed the board on a former occasion, an establishment at Leicester for the purpose, the proprietors of which had issued prospectuses asking for fresh capital; and, if that succeeded, could it be imagined that that company, or some derivative of it, would not be prepared to tender for all the sewerage which the board might have to dispose of? Under all the circumstances of the case, he was of opinion—and (though it was sometimes thought that the opinion of a professional man was of no value unless it was paid for) he tendered that opinion to the board for what it was worth—that a plan so consistent, so complete, so large in its views, and yet so minimum in its cost, considering the circumstances—capable of dealing with every branch of the subject, both in substance and in detail—he had never before seen; and he complimented their engineer, and tendered him his best thanks for the same. (Hear, hear.) He had only to say further, that, as the plans became more thoroughly understood, they would be more completely appreciated and valued. He hoped, therefore, that, having undergone the most searching investigation by the board, no time would be lost in carrying them before the Government for approval, with the view to their being brought into operation at the earliest possible period. (Hear, hear.)

Mr. WRIGHT seconded the motion. He said he had taken a deep interest in the question for several years, and could assure the board that he rose on the present occasion with a full knowledge of the responsibility that attached to every member of the board, and of the still greater responsibility that attached to any one who took upon himself to propose or second any scheme of the kind. His friend, Mr. Carpmael, had so completely gone over the mechanical details of this subject, and had shown how far the plans of Mr. Bazalgette contrasted favourably with those of Mr. Frank Foster, and were the result of more enlarged and comprehensive ideas, that it would be indiscreet in him (Mr. Wright) to attempt to follow and occupy the same ground as so able a master. But there were two or three points of the deepest importance to this board and to the public, upon which he had scarcely, if at all, touched; and, as he (Mr. Wright) had thoroughly investigated thems and made experiments upon them, he was desirous now to state his view, thereon to the board. There would be no difficulty in dealing with this question, were it not for the exaggerated notions which had gone abroad as to the value of sewerage manure. In the public press, the advocates for the utilisation of the sewerage had for years had their own way, and every atom of sewerage had come to be looked upon as a certain portion of wealth which it was deemed to be wastefully extravagant of, unless it was applied to the fertilisation of the land. It was true, that the statements made in the public prints had been answered by the Society of Arts and other assemblies of scientific men; but they had never been refuted in a popular way. If the sewerage of London was a valuable material, then, as practical men, the board would be wrong in driving that material out to sea without deriving the slightest remuneration from it; but if he could show, as he believed he could, that practically, as far as any experiments had hitherto been made, the sewerage was worse than useless, that stable manure was to be had in London for the fetching away, and that other manures, of a more offensive character, had to be paid for to be removed; and if, moreover, he could show, from chemical analysis, that great mistakes had been made in the asserted value of sewerage manure, the board would be able to judge of the proper estimate to be put upon the general opinion on this subject. He was not there to doubt that sewerage manure contained the self-same elements of nutriment for plants that guano did; but then it was proved that it was only in the proportion of 5 per cent, whereas in guano it was 75 per cent. He had that morning ascertained, from one of the principal merchants in the City, the price of the best Peruvian guano, which he found was £10 per ton; and also of sulphate of ammonia, the present price of which was £17 per ton. Now these articles, specimens of which he produced, were dry powders, every atom of which was nutriment to plants; but in the same bulk of London sewerage they had 95 per cent. of water. Let them try the experiment of mixing that guano with 95 per cent. of water, and then ask the agriculturist what would be the reduced value to him; and what his answer must necessarily be, that was the answer which must be given to all these sewerage manure schemes. In a paper which was read before the Society of Arts, on Wednesday, March 7, 1855, by J. B. Lawes, Esq., F.R.S., on "The Sewerage of London," there was much valuable information on this point, to which he would refer members of the board. In one part of that paper, Mr. Lawes quotes the opinion of an agriculturist, who says—"Farmyard manure is estimated to contain about ½ per cent. of this ammonia, or about 11 lbs. in a ton. It would therefore require about 17 tons of farmyard manure to supply to the land the amount of ammonia used in the experiment No. 16. Now, my farm is situated 25 miles from London, and being inconveniently situated for conveyance by railway or canal, the cost of carriage from London, upon one ton of manure, is 15s. Therefore, if I were to bring my 180 lbs. of ammonia from London in the form of dung, the carriage alone would amount to £12. 15s. I could obtain the same amount of ammonia in half a ton of guano, or in 7 cwt. of sulphate of ammonia, at the cost of one-half of the carriage alone of the dung. This example clearly shows that it would be cheaper for me to give £10 per ton for guano or £14 per ton for sulphate of ammonia, than to have the dung as a gift." He had that morning inquired the price of stable-yard manure, and he found that in the suburbs it was 5s. per week for twenty horses; but in Paddington it was nothing per horse, and in the City of London and in Westminster it frequently happened that the manure was taken away as a favour. Such being the case, what could be the value of sewerage manure, which was so diluted that it contained only so small a per centage of fertilising property? If any one would invent a scheme by which the valuable properties of the sewerage could be obtained in a concrete form, so as to be able to compete with guano in the market, the case would be altogether changed; and though none of the present plans yet before them professed to accomplish this, he (Mr. Wright) believed that some day it would be done. At the same time, as practical men, they had nothing to do with speculating upon the achievements of the future: their duty was to lay hold of and apply the results which had already been attained. Let them look at their act of Parliament. Did it not say that within four years they must complete the sewerage of London? If the Legislature had intended that the board should make experiments, they would not have limited them as to time; but their language and intention seemed to be this—"We have had experiments enough already; we will now organise a body of practical men, who shall take science as they find it, and carry out some scheme for the complete drainage of the metropolis." He hoped he had satisfied the board on this point, that, with their present attainments, the sewerage of London was comparatively valueless. Some persons inquired—"Why send to Peru for guano, when you have the same description of material close to you, polluting your river, and destroying the public health?" But let it be remembered that guano was the excrement of birds, which was always more concrete than that of bipeds; that it had been deposited beneath a tropical sun, by which it had gained valuable properties; and that it could be brought the whole of that immense distance so as to be sold at a less cost than the material lying at their own doors. That was the state in which Mr. Balzagette found this question when he was asked how to get rid of the sewerage matter? he replied in effect, "I cannot sell it; there is nothing to be done with it but to send it out to sea as quickly as possible." The question for the board then to consider was, has he taken the best course to enable him to do so? Mr. Carpmael had so fully justified his plans, that he (Mr. Wright) would simply say, that he, as a practical man, entirely endorsed the opinions expressed. Without any feeling of jealousy on his part, Mr. Bazalgette had incorporated in his scheme all the best parts of those presented by gentlemen who had gone before him; and he (Mr. Wright) believed it was unquestionably the right plan for the board to adopt. (Hear, hear.) The next question was this—under the terms of the act of Parliament they were compelled to put the sewerage into the Thames below the metropolis. He would not go into the minutiæ of the act, but would only say, that when Parliament made that clause they fully meant that the sewerage should no longer be a nuisance to the inhabitants of this great city. If he (Mr. Wright) thought that, by Mr. Bazelgette's plan, the sewerage would be brought back by the returning tide to pollute the Thames within the inhabited parts of its banks, he would not stand there to advocate it. At the present moment, the best way in which they could test this question was, not by going into the consideration of the experiments made by the float, because, with Mr. Carpmael, he believed that the float was not a fair mode of ascertaining the fact. Had the Thames been a non-tidal river, and was continually running towards the sea, there would be no difficulty; because, if the sewerage went in at Barking, the whole would pass with certainty out of reach of the metropolis; but, he would say with confidence, and if the board appealed to Mr. Bazalgette he would confirm the statement, that practically the Thames was a non-tidal river for the purposes of his scheme. There was no doubt of the fact, that whatever was sent up by one tide would come down with the next, *plus* the quantity of water which it received in its passage; and he perfectly agreed with his friend Mr. Dixon, who said that, in his opinion, if the sewerage were put into the river at high water at Barking Creek, they would never see it again. In order to satisfy himself of the effect of passing all this sewerage matter into the Thames at any one point, he had carefully mixed a quantity of sewerage upon the Liebig scale—viz., 5 cubic feet per head for every individual, or one

part of dry excrement to 2500 parts of water—and had thus manufactured artificial sewerage precisely as it would be by Mr. Bazalgette's plan. From these experiments he had satisfied himself that, when the sewerage was put into the Thames at Barking, being diluted with 18 times its bulk of water, or 45,000 parts of water to one part of dry excrement (and water was the most effective deodoriser), and carried down with the tide some twelve miles, he would be a clever chemist indeed who could discover any trace of deleterious matter in it. Compare the present state of the Thames with what it would then be. He was told by Mr. Bazalgette that the great mass of the sewerage of London was put into the river in from three hours before to three hours after low water. Now, if they tried an experiment with the float by putting it into the river at Blackfriars Bridge at low water, they would find it up at Putney by the time of high tide; and yet, though, as he had said, the whole of the sewerage was now put into the river within three hours of low water, the Thames was drinkable above Chelsea Bridge. By and by, the sewerage would be delivered at Barking Creek, six miles below Blackfriars, at high water, which being equivalent to its discharge at low water twelve miles lower down, they could therefore easily judge how effectually the offensive matter would be got rid of. Indeed, he believed that, if the enormous expenses of taking the sewerage out to sea at once, as had been urged, did not prohibit such a plan, the outlet at Barking would afford them a much easier and readier mode of mixing their sewerage and disposing of it altogether. A word or two as to their position as a board in dealing with this question. It was not too much to say that the eyes of a large number of persons out of doors were fixed upon them. It was a new board, without a history. They wanted precedents; though, after the precedent in committee, he would say to the public, they would not want them long. This scheme had been gone into in a fair, open, manly spirit, and the committee did not bring up their report till every topic was exhausted, and every question replied to. His only regret was, that the public were not admitted, because he believed the public were not so well prepared for this scheme as the members of the board were, having had all their doubts and queries satisfied. But, as he said, the eyes of large numbers of persons were fixed upon them, and a great deal depended upon the result of their present deliberations. He believed that the gentlemen whom he met at that board were gentlemen of great ability and practical experience, but he could not lose the opportunity of warning them to guard against that evil of all municipal bodies—procrastination and an infinity of debate. The advantage of a despotism over a democracy was not the display of superior wisdom, but the precision and promptitude of action which it ensured. This question of the main drainage of London had been the cradle and the grave of some half-dozen Commissions of Sewers; but he would urge upon this board—the most popularly elected body of the day—to let the world see that they were men of business. (Hear, hear.)

Several members immediately rose to speak, but all gave way to

Major LYON, who, after expressing his regret that the subject had been opened at all to-day, considering the vast amount of other business which required their attention, moved the adjournment of the debate to a special board, to be held on Wednesday next.

Mr. SAVAGE seconded the motion.

Mr. DENNIS proceeded to speak upon the original question, but after a few sentences was stopped by

The CHAIRMAN, who intimated that the question of the adjournment of the debate must first be disposed of.

Several members spoke for and against the amendment, after which the show of hands was taken, when there appeared—For the adjournment, 20; against it, 14: majority, 6.

HAMPSTEAD HEATH.

A memorial agreed to at a public meeting of the inhabitants of St. Pancras, on the subject of Hampstead Heath, was read, as also resolutions from certain metropolitan parishes on the same subject.

The several documents were ordered to lie on the table.

ENGINEER'S REPORTS.

The ENGINEER reported on applications from vestries and district boards to construct sewers in St. Matthew, Bethnal Green Parish—Fleet Street, Broadway, Hope Street, and Temple Street; Hackney district—Clapton Estate; and leave was given accordingly. On assessment of Bransbury House, Willesden; on construction of new gullies connected with main sewers, at the cost of the Metropolitan Board of Works; on works executed on emergency; and on works to be executed under general contracts.

A large number of reports from the superintending-architect on applications of a private character were read and disposed of.

Several letters and communications were read.

The cash account presented showed a total general balance of £153,366. 12s. 1d.

The board adjourned at a quarter past five.

CHARTERED GAS COMPANY.

The ordinary Half-yearly General Court of Proprietors of this Company was held on Friday, the 2nd of May, at the Company's Works, Horseferry Road, Westminster—BENJAMIN HAWES, Esq., in the chair.

The SECRETARY commenced the business by reading the notice convening the meeting, and also the minutes of the last meeting.

Mr. BOX: I think I caught the expression, "the minutes of the last meeting were taken as read." It is a farce to call it reading the minutes, to say "taken as read." We want to know what is there.

Mr. BURLS (the secretary): As you have to-day before you the report and accounts of the company, so you had at the last half-yearly meeting; and, instead of taking up the time of the court by a recapitulation of the report and accounts of the previous half-year, it was considered more convenient to take them as read, in order to save time. That was the course taken before, and I presume it will be followed again.

Mr. BOX: I shall take the sense of the meeting upon it, if that is to be the course pursued. Surely five or ten minutes cannot be an object for the purpose of knowing what have been six months' proceedings.

Mr. GIESLER: Upon the last occasion it was put to the meeting whether it was necessary to read the minutes, and it was decided not to be necessary.

Mr. BOX: I move "That the report be entered on the minutes."

Mr. JOHN BOX seconded the motion, which passed unanimously.

Mr. BECK: On a future occasion the secretary will state, that "The report taken as read was as follows."

Mr. BOX: I suppose the report and the accounts will be entered together?

Mr. BECK: The accounts never have been entered on the minutes.

Mr. BOX: I will include that in my motion, if you please—"That the report of the directors and the accounts be entered on the minutes."

Mr. BECK: Very well.

The CHAIRMAN: There is no occasion to put the motion; it is understood. (Cries of "Yes, yes.")

The SECRETARY then read the following report circulated on the present occasion:—

Gentlemen,—We have now the pleasure to transmit for your information the profit and loss account and balance-sheet of the company for the half year ending at Christmas last, together with a report of the more prominent proceedings of your court of directors during that time.

It having become necessary to enlarge the meter-house at this station, and to erect two large station-meters capable at the least of registering 60,000 feet each per hour—also to provide a new exhauster—these have been completed; and the ground previously occupied for manufacturing purposes, being quite inadequate to the present scale of operations, your directors have purchased freehold premises near to the works, and also some upon lease, affording greater facilities for gas stowage. The payments already made under these heads amount to £5124. 9s. 2d.

Upon a comparison with the accounts of the half year to Christmas, 1854, it will be seen that the rental is £4084 larger now than at that period, upon an increase in the consumption of coals of 1078 tons. The produce of coke and breeze has not equalled the returns then made.

The charge for new works is £2422. 1s. 1d., and £1250 have been written off this account, and carried to the debit of the half-year's profits. The result, being a balance of profit, amounting to £17,937. 7s. 1d., your directors will have to recommend for your adoption a dividend at the rate of £6 per centum per annum for the half year; to which dividend they propose to add, this time, an extra dividend of one-half per cent., or 3s. per share, on the £50 shares fully paid up, and the same proportion upon those whereon £10 each have only yet been called—all free of income-tax.

The position of your concern is therefore highly favourable; and it affords pleasure to your court of directors to testify to the zeal and promptitude shown by every officer of the company in the discharge of greatly augmented duties; and we are confident you will approve of a gratuity made to them, by way of encouragement, of £5 per cent. upon their respective salaries.

In conclusion, your court of directors assure you that they lose no opportunity of devising and adopting every scientific improvement in the manufacture, purification, and distribution of gas, looking for their reward in your continued confidence, the satisfaction of the public, and the advancement of the interests of this great establishment.

BALANCE-SHEET, DECEMBER 25, 1855.

Dr.				*Cr.*		
To amount of 1st, 2nd, and 3rd capitals, after deducting the amount of 1419 shares in the 1st, 2nd, and 3rd capitals cancelled		£529,050	0 0	By amount due to the company, viz.:—		
Amount of 4th capital, after deducting amount of 836 shares cancelled		51,640	0 0	For rent of light at the several stations, viz.:—		
		580,690	0 0	At Westminster station	£ 39,511 0 1	
Expended, viz.:—				At Brick Lane ,,	19,988 2 6	
Westminster station	£314,351 10 10			At Curtain Road ,,	9,585 0 7	
Purchased this half year freehold and leasehold property	5,124 9 2					£69,084 3 2
	319,476 0 0			For coke and breeze sold at the stations, viz.:—		
Brick Lane station	144,912 19 11			At Westminster station	1,568 15 5	
Curtain Road station	62,298 15 10			At Brick Lane ,,	1,637 7 11	
		526,687 15 9		At Curtain Road ,,	47 7 2	
			£54,002 4 3			3,253 10 6
Amount of dividends remaining unpaid			5,562 7 6	For tar and other products sold at the stations		2,045 6 3
Amount of debts due by the company for coals, and to sundry tradesmen and others			9,030 19 5	Amount of the balances of sundry accounts due to the company		1,769 4 7
Amount due to the treasurer			10,000 0 0	Treasurer's accounts, viz.:—		
Amount due to the collectors for commission, viz.:—				Balance of general account	£ 4,715 7 9	
At Westminster station		£ 226 9 6		,, dividend ,,	287 14 6	
At Brick Lane ,,		105 13 10				5,003 2 3
At Curtain Road ,,		44 9 3		Bills on hand not paid		189 15 2
			376 12 7	Cash advanced to pay wages at the stations		920 0 0
Amount due for wages and contingencies, viz.:—				Stores on hand, viz.:—		
At Westminster station		856 7 4		At Westminster station	5,437 18 6	
At Brick Lane ,,		431 13 10		At Brick Lane ,,	3,863 15 1	
At Curtain Road ,,		202 4 0				9,301 13 7
			1,490 5 2	Coals on hand, viz.:—		
Amount due at the chief office for contingencies			6 16 10	At Westminster station	6,310 9 9	
Balance of profit and loss, viz.:—				At Brick Lane ,,	3,770 17 6	
Balance to June 24, 1855	£21,069 19 3			At Curtain Road ,,	770 14 6	
Less half year's dividend on £580,690.	17,430 14 0			On ship-board	4,202 17 11	
		3,649 5 3				15,054 19 8
Profit of the half year ending Dec. 25, 1855		17,937 7 1		Coke and breeze on hand, viz.:—		
			21,586 12 4	At Westminster station	416 11 6	
The Contingent Fund		17,969 18 9		At Brick Lane ,,	161 17 9	
Invested in the purchase of £7601. 7s. 2d., Reduced Three per Cent. Annuities		7,000 0 0		At Curtain Road ,,	90 2 6	
			10,969 18 9			668 11 9
				Tar and other products on hand		411 13 7
				Ship *Dispatch*		1,168 10 10
				Balance of amount expended for new works at Midsummer, 1855	2,983 4 5	
				Expended during the half year to Christmas	2,422 1 1	
					5,405 5 6	
				Less amount written off profit and loss account	1,250 0 0	
						4,155 5 6
		£113,025	16 10			£113,025 16 10

Dr. PROFIT AND LOSS, FROM JUNE 24 TO DECEMBER 25, 1855. *Cr.*

To coals consumed in the half year, including labour, and deducting freight for the two steam-ships				£43,457	12	5
Stores, &c., used in the half year, viz.:—						
Retorts and setting, including labour				4,803	11	4
Lamps and lamplighting, ditto				1,788	15	6
General wear and tear, mains, and carrying on the works, including labour	£9,830	19	10			
Less received for old and burnt stores	575	8	3			
				9,255	11	7
Meters and fixing, including labour				3,612	5	2
Paving				1,140	17	4
Directors and auditors				1,203	6	0
Salaries and commissions				4,123	19	3
Wages and contingencies				10,955	7	1
Rent and taxes				1,906	6	1
Income-tax				759	9	8
Law expenses				153	8	8
Annuity to Mr. John Evans, late superintendent	100	0	0			
Ditto to Mr. J. Cowell, late accountant	65	0	0			
				165	0	0
Sick and benevolent fund				130	0	0
Debts due at the station, being bad, written off	2,134	4	9			
Less received on bad debts	124	10	5			
				2,009	14	4
Amount written to the credit of new works				1,150	0	0
				£86,805	5	6
Balance				17,937	7	1
				£104,742	11	6

By rental of light for the half year	£81,355	11	5
Coke and breeze, deducting labour	18,684	11	2
Tar and other products, ditto	2,710	3	5
Discounts and abatements allowed by tradesmen	1,457	18	11
Poplar station rent account, balance	11	13	4
Rents received	357	15	11
Dividend on the Contingent Fund, viz., on £7601. 7s. 2d., Reduced Three per Cent. Annuities	106	8	4
Interest on deposits	58	9	0
	£104,742	11	6

(Signed) FRAS. WITHAM, J. W. SLOPER, Auditors.

The CHAIRMAN: Gentlemen, it gives me great pleasure to see the proprietors here in this place, upon their own freehold. It also gives me pleasure to see that we have been enabled to bring the dividend now to a tolerably fair one; and I hope you will be satisfied with it. This company is not like many others; we have very important establishments to light. Our business is not merely lighting a few shops and a few private houses; but you know that we have that very extensive, important, and large establishment, the Palace at Westminster to light. That requires infinite attention, and we have a man there always to attend, to watch and see that there is no diminution of light; and, if there should happen to be, to transmit a message immediately by express to our superintendent here. While we have lighted that palace, we have not had one single complaint. (Hear, hear.) The reason why we were called in was because the works that originally supplied the palace were so far off that there was too great a drain upon the pipes before the gas came to the house, which was likely to interrupt the light; and, indeed, they were sometimes left in darkness. Now we, upon the contrary, keep constant watch upon it; and Mr. Barry, the talented architect of that building, desired to have a separate main laid down to the house, so that there should be no impediment whatever to the supply, nor any draught to diminish the light. That was done; but he was not satisfied with that, and desired to have another main, in case of any accident, though we contended there was no chance of any. We have now two separate mains entirely devoted to them, with no other draught upon them whatever; so that I am in hopes that palace will be lighted to their satisfaction and to our own. Now, you are well aware that we have had a very considerable expenditure, and that we have diminished what is called the "Contingent Fund." We contend that we have no right to subtract from the present proprietors that which they, as proprietors of the concern, are entitled to at the time; and therefore, in future, we shall charge new works to capital; but all repairs and extensions we shall continue, as usual, to pay out of our rental. That will make a difference in favour of the proprietors. We do not give you much increase this half year, but we are willing to make a beginning, to show our intention of doing all we prudently can do, and that we are anxious to divide as much as possible among the proprietors. (Hear, hear.) We think it is no more than just to the proprietors, who find the capital in this as in all other partnerships, should divide their profits; but whether it would be prudent to reserve a part for unlooked-for circumstances, is a matter for your consideration. We have left £1250 this year, and that we consider quite enough, because the works are at this moment worth infinitely more than they cost in building. Indeed, instead of depreciation, we might increase the value of them; but that we do not; nor do we take any notice of the large capital that we have in meters. We consider them all in fair course of action, and take no account of them whatever, nor of furniture, and a variety of things which I see other companies do take notice of. (Hear, hear.) We have now a freehold property worth £150,000, and we take no notice of that. I may tell you, that for a long time we have been increasing our works here: we have increased them by taking the room that we used for stowage of coal, and making a retort-house of large dimensions. That has put us to great inconvenience, and has cost, last year, £900 or £1000. We have not found any material deficiency in having our coals hanging about in barges exposed to the weather, because we pay only for what passes over our weighing machine. We are now erecting over the way a new gasometer of very large dimensions. The stowage of our gas is not adequate to the present demand; so that, in foggy weather and short days, it has been the habit for some years of doing what the superintendent used to call "pinching the light;" that is, of course, "pinching" the consumption, and "pinching" our profits; but, by having sufficient gasometer room, we shall be able to give an abundant supply at any time when it is wanted. To show you the necessity we have for additional stowage, I may just tell you that the Phœnix has just finished a gasometer capable of storing 1,000,000 feet. At our three stations we have not got stowage for more than 700,000 feet; so that I think you will consider we are perfectly justified in making a material increase in our stowage. I believe Mr. Gray, the chairman of the City Company, will tell you that he has got as much stowage as we have, while they are making about one-fourth of the quantity. We have been going on in this way for a long time under great disadvantage, and certainly reducing our income and our profits. The increase we have had in our business is really very extraordinary. We thought that with the early closing of the shops there would be a material reduction, and some companies have so found it. Large shops at this end of the town and in the City are closing early, and giving Saturday half holidays at the warehouses; but, notwithstanding that, you would scarcely credit that, while the gas we made a few years ago was only from 400,000,000 to 500,000,000, we now make upwards of 900,000,000, and we have only the same gasometer room as when we made the smaller quantity. At our works at Curtain Road we have laid out no money yet, but they are in a most dilapidated state. We do not want to do anything there at present, because we have ulterior views, in case we are obliged to supply cannel gas to the City, in order to prevent my friend Mr. Gray getting all the custom. (A laugh.) We may be wanted to supply the Bank of England, and so on. We do not want to do anything at present, but in a short time we must make some great alteration at the Curtain Road station. For that, we require a large increase of available capital. Our capital is the smallest in London, compared with our rental; and I wish my friend Mr. Box to bear that in mind. I have taken out from the printed reports the capital of several companies; and, without mentioning the names, I may mention that the capital of one is £192,000, and their rental £28,000; the next is £225,000 capital, and the rental £38,000; the next, £218,000 capital, and £47,000 rental; the next, £459,000 capital, and the rental £90,000. Of our company, the capital is £580,000, and our rental is £200,000; so that, in proportion to our rental, our capital is much smaller than any one of the companies I have alluded to. In the year 1852, the products we sold amounted to £24,400; in 1853, £35,000; being an increase of £11,000; in 1854, £49,000; and in 1855, £46,000. That is owing, in a great measure, to the low price which coke has fetched. It has been quite a drug upon the market the last six months. Our rental was, in the year 1852, £135,000; in 1853, £149,000; in 1854, £156,000; and now it is nearly £200,000; so that I think there is no reason to be very fearful of the stability of this company. We have had an immense increase of private lighting, through, I believe, the extra means we have adopted for purifying the gas and increasing its illuminating power. We believe that gas has been adopted in a great many private houses in consequence of this. It has been said, that since I have had the honour of presiding here, I have "told a flattering tale." I did certainly endeavour to give confidence to the proprietors, not to run into the market and throw away their property, and no doubt I used very flattering terms; but, to use the language of an eminent orator in the House of Commons, I saw something "looming in the distance." Now it is not "something in the distance," but we have it in hand, and there is every prospect of our continuing to hold it. Some years ago, our shares were down to 34 and 36, and now they are as high as 59. The small shares were down to 6, and now they they are 11½. I regret that our late friend Mr. Wigg should have left us, for that tended to give a sort of panic to the concern, when we were lessening our dividends. I have a much greater pleasure than he had, for he had the pain of reducing your dividend, while I have the satisfaction of increasing it. I did inform the proprietors that the Queen—God bless her! for she rises superior to all bigotry and prejudice—although she has not had the whole of Buckingham Palace lighted with gas, yet a private room for her own use is so lighted; and as I told you, I think, at the last meeting, she has had the new buildings lately fitted up by her surveyor, Mr. Cubitt, and lighted with gas; and I hope that those who have the *entrée* to her next ball will go and see the beauty of the gaslight. I called upon the inspector to make a report, and he having been there, has done so, which I will ask the secretary to read.

The SECRETARY then read the following report:—

Sir,—I beg very respectfully to hand you at foot a list of the new rooms at Buckingham Palace which are now lighted with this company's cannel gas, and to state that, after nearly two hours' inspection of the same, at a trial-lighting made on Monday last by command of her Majesty, his Royal Highness Prince Albert, with several members of the royal family, expressed their great approbation as to the results. I cannot refrain from adding, that the effect produced was beyond all conception, and very far exceeds any attempts hitherto made in gas lighting. The gas-lights in the new ball and supper rooms are suspended from the centres of each of the panels of ceiling, and are covered with massive clusters of glass prisms, producing the most chaste and elegant effect. The windows are lighted by means of very fine jets placed behind the ground glass, forming devices to correspond with the engraving on the same. The other rooms are lighted with burners placed above a richly-ground and engraved glass ceiling, producing the like magnificent effect, and giving a light quite equal to day. The apparatus is so completely arranged that each burner acts as a ventilator, and, notwithstanding the immense number of lights (7500), there is scarcely any perceptible variations of temperature in any of the rooms. Permit me, further, to express my firm conviction that the introduction of gas into these rooms will lead more to the extension of gas lighting in the mansions of the nobility and gentry than any other plan hitherto adopted, inasmuch as it will not only prove the comfort and economy thereof, but will also fully demonstrate that, when cannel gas can be obtained, no other artificial light can produce equal results.

(Signed) THOMAS CARTER.

To Benjamin Hawes, Esq., Governor.

The number of lights are as follows:—New ball-room—from ceiling, 609; windows, 4988; making 5597. Promenade gallery, 1323; supper-room, 197; approach-gallery, 243; ante-room, 154; making altogether 7514.

The CHAIRMAN: I have a little anecdote here, that was written by a man whose pen alone has produced a greater change, perhaps, in the laws of this country than any other man, excepting Lord Brougham—I mean Sydney Smith! He was in Scotland, and, when coming up, the late Lord Durham invited him to spend a few days at Lambton Hall. He wrote to Lady Mary Bennett in these terms:—"From thence to Lambton. And here, I ask, what is the use of wealth so luxurious and delightful as to light your house with gas? What folly to have a diamond necklace, or a Correggio, and not to light your house with gas! The splendour and glory of Lambton Hall make all other houses mean. How pitiful to submit to a farthing-candle existence, when science puts such intense gratification within your reach! Dear lady, spend all your fortune in a gas apparatus. Better to eat dry bread by the splendour of gas, than to dine on beef with wax candles.—And so good-bye, dear lady. SYDNEY SMITH."—I consider that the Queen's adoption of gas is a new era in gas lighting, and you may rest assured that it will produce a very great demand at the West End of the town. I know the Marquis of Lansdowne was quite surprised at it, and said he should have his house fitted up

with it. The Duke of Wellington has had 700 lights laid on; and he employed Mr. Leslie to fit up his house for him. Now, one great argument against gas has been the increase of heat. Now, I went up to the roof, where I expected it would be very hot, and I can assure you the roof was as cool as possible, because of the perfect ventilators. That shows that whatever inconvenience there may be with regard to heat, it may be got rid of by having a good gas-fitter and good ventilation. Gas certainly requires ventilation—there is no question about that; but the important thing is to have a first-rate gas-fitter, who understands his business. Gentlemen, I have nothing more to say to you, and I will move, "That this meeting do agree to, and confirm, the report of the court of directors, and the auditors' report and statement of the accounts of the company; and that the same be entered on the minutes of the court of proprietors."

Mr. SHOVE: We have three auditors, and I see that the accounts, both this half year and the last, are only signed by two.

Mr. BURLS (the secretary): One of the auditors happens to be at Geneva; he sent in his resignation, which the court of directors did not like to accept; and his letter will be read in the course of the meeting.

Mr. BECK: Perhaps I had better give a little further explanation relative to the accounts. There is a different mode of keeping the accounts in our books this time, which may probably mislead Mr. Box and some others. Many of you will have observed the difference between the wages and contingencies this time and previous half years. In order that we might compare our position with that of other companies, we have added all the costs of wages affecting coals to the cost of coals, and we have deducted from the prices obtained for products the cost of labour affecting those products. That, of course, increases the cost of coal, and decreases the amount received for the products; but it at the same time decreases the wages and contingencies.

Mr. BOX: It is very true, you have told something like a flattering tale in your *viva voce* report; but not so with regard to the printed report of this half year. I made my usual application at the office, about a week back, for information which I have uniformally received, without intermission, for the last 11½ years; and I should like to know why I have been refused the information which I sought, by which information alone, without any observations at all from the chairman, and without the circulation of any printed report amongst the shareholders, I can form my own opinion as to the prosperity of this concern. That information is a hundred times more valuable to me than anything you have said regarding the Palace, though of course it is very pleasing, so far as it goes. When Sir David Pollock was the chairman, I made statements frequently showing a difference of 29 per cent., and even 45 per cent., in the result of the workings of the same station in different half years; and my statements took the directors by surprise. They did not even believe them to be correct, and many of the shareholders in the room doubted them; but only one gentleman ever took up the challenge which I threw out, and he never went into it. Sir David Pollock said, "Well, Mr. Box, apply at the office, and you shall have all the information you want to form your own opinion;" but now, when you come before us and tell us this flattering tale as to the prosperity of this concern, I am bound to call in question the correctness of your statements, when you withhold from me every information by which I can judge of their correctness. The information I wanted was the amount of rental produced from the coals at each station. Then I can get at the per centage of revenue from the coals used; and when I have got that, I do not want any gentleman to tell me whether the concern is prospering or not. I have made similar calculations with reference to this company nearly twenty years, and the Phœnix nearly the same number of years, and the Commercial for three years, and in the Isle of Thanet Cas Company for twenty-six years. I do not want a parcel of paragraphs printed and circulated to tell me how the company is going on. In answer to my application at the office, I received the following communication from the secretary:—

Chartered Gas Company, April 29, 1856.

Sir,—I have laid you request to be supplied with a detailed statement of the amount of rental of light at each station, and specifying the same for the half year to Christmas last; also of the quantities and amount of coals used, coke, breeze, amoniacal liquor, and naphtha."

Now, those are what are called residuum products from coal; and for the last eleven years I have had the rental given me, and for the last four or five, the products; and the accounts for the products went back to 11½ years ago. It was through your instrumentality, sir, that I got them. You were kind enough to give orders that the information should be supplied to me; and for that information which I have got I beg to thank you, as I have done before. Now that information is withheld, and why I do not know. The communication states that the secretary has laid my application before the directors of the company, and then it goes on—

I have to express their regret that the preparation of such returns would seriously increase the duties of the office; and that, as the accounts transmitted to the proprietors are fuller in detail now than heretofore, they are unable to supply to any individual proprietor what they might, with equal justice, be applied to to furnish on the part of every shareholder of the company.

Now, sir, I say that the accounts, instead of being fuller in detail than formerly, are quite the reverse. For the last eleven years I have not seen accounts so scanty in information as they are this half year. This time you mix together coke, and breeze, and labour; while previously we have had coke by itself, and breeze by itself, and also what tar and ammoniacal liquor have each produced. In the last half year's accounts we had also the rent received by itself; but now you put the rent and taxes together, and the difference is something very considerable. They were last half year £1202; and now they are are very nearly £2000. You this half year proposed to divide in dividends a sum amounting to £20,324, which is £2386 less than the earnings. If you wanted to make up 6 per cent., I think it would be quite legitimate; but to give an extra ½ per cent., I think it is not legitimate. I do not say you have done it with a view of giving a fictitious value to the shares in the market; but it will have the effect of doing so, and that at a time when you are proposing to go into the market to sell cancelled shares. You do not hold out the idea that you will continue to pay more than 6 per cent.

Mr. BECK: We carefully abstain from doing anything of the kind. (Hear, hear.)

Mr. BRACEBRIDGE observed, that if the company were now to go to Parliament for an act, they would have to divide the whole of their earnings.

Mr. PERRY said there was a special meeting convened, at which the question of cancelled shares could be properly discussed.

Mr. BOX conceived that he was quite in order in speaking to the question of dividend. He was of opinion that the directors should not divide more than 6 per cent., though he liked a good dividend as well as any man in the room. (Laughter, and cries of "Question question.")

The CHAIRMAN: I have abstained from interrupting you; but, really, there are many gentlemen who think you are taking up the time of the meeting unnecessarily.

Mr. BOX: Am I to have the information I asked for?

The CHAIRMAN (emphatically): No, sir. (Loud cries of "Hear, hear.)

Mr. BOX: Then I shall move a formal resolution.

The CHAIRMAN: Mr. Box has paid me a compliment for having been the means of supplying him with certain information; I do not thank him for it, for I contend that Mr. Box has no right to information which the other shareholdors have not. If Mr. Box is to have this information, let every proprietor in the room have it; but we should want an office as large as the Old Excise Office if we had to make out all these accounts. I was not present at the meeting when the letter which he has read was ordered to be written, for I was attending the Commissioners of Sewers, where fortunately I made a contract, which I believe will be beneficial to this company, having regard to previous prices. Had I, however, been at the meeting, I certainly should have supported the resolution of the directors then present. (Hear, hear.) Mr. Box seems to want figures in order to compare one station with another.

Mr. BOX: That is just it. (Cries of "Order, order.")

The CHAIRMAN: That is not the business of the proprietors, but of the directors. Have you confidence in us, or have you not?

Mr. BOX: No, we have not, if you withhold information.

The CHAIRMAN: You may not have, but I am sure I can see many about me who have—(loud cries of "hear, hear")—and you may rest assured that as long as I have any influence here, no one proprietor shall have information which another has not. (Hear, hear.)

Mr. BECK: The information which Mr. Box asks really can have nothing in the world to do with the general result of profit and loss. If we were using the same coals, and obtaining the same price at all the stations, you might make a comparison; but as that is not the case, the figures Mr. Box asks for would be utterly useless.

Mr. WM. HAWES: Mr. Box is in the habit of addressing us in this room several times upon almost every question, and I really think the meeting should say how long any gentleman should occupy its attention.

Mr. BECK: If we want gas here, we send it from Brick Lane, and in the same way from there to the Curtain Road. I can only repeat what I have said before, that the figures Mr. Box asks for would be of no use whatever to him.

Mr. WM. HAWES: I believe I shall be borne out by the meeting when I say that, if there is one person whose statements have been more thoroughly contradicted and more thoroughly disproved than another, they are those of Mr. Box. Figures may be made to prove anything; but the quantity of coal is no test.

Mr. BOX (with some warmth): I cannot sit still and hear a gentleman make statements of that kind without saying they are untrue. (Loud cries of "Order, order.")

Mr. WM. HAWES: I repeat that the quantity of gas produced at a station, compared with the quantity of coals used, unless you know the quality of the coals and the price, can lead to no useful result.

Mr. BOX: I deny that statement. (Cries of "Order, order.")

Mr. WM. HAWES: However pertinacious Mr. Box may be, and however superior he may be to me in the loudness of his voice, I again repeat the statement. Mr. Box, when he speaks of the directors being wrong in declaring an extra half per cent., forgets that he is comparing the worst half year with the best. He tells you he denies the truth of the documents.

Mr. BOX: No, I did not. (Order, order.)

Mr. WM. HAWES: If he denies the truth of one statement, why does he believe another? If he denies the truth of what the directors give to him in print, why should he believe that which he wishes them to give to him in pen and ink? (Hear, hear.)

Mr. GIESLER: I think the accounts are very unsatisfactory as to mode. You surely will not tell me that money expended in works is an available asset?——

Mr. BOX: Hear, hear! That is another thing. (Loud laughter.)

Mr. GIESLER: It is a portion of capital expended.

Mr. BOX: Hear, hear! That is true. (Renewed laughter.)

The CHAIRMAN: If it will save time, we will strike the words, "available assets," out.

Mr. GIESLER: In the last account, the contingent fund is stated to be £17,969. 18s. 9d.; from that is deducted £7000, which is invested in Consols; that leaves £10,969. 18s. 9d. You have also £10,000 due to the treasurer; and the consequence is that we have spent £46,000 in a few years, while we have added a debt of £10,000, making £56,000, minus £10,969. 18s. 9d.; so that we have increased our debt some £3000 or £4000. You put down £5124. 9s. 2d. for enlarging the meter-house, erecting two large station-meters, and providing new exhausters; I should like to know whether that would be carried to capital or income?

Mr. BECK: That very item is carried to capital—"Purchased this half year freehold and leasehold property, £5124. 9s. 2d." I think gentlemen ought to read the accounts before they find fault.

Mr. GIESLER: Allow me to say that I have read them; and I think the directors should see that the accounts are so made out as to be perfectly comprehensible. Do I understand that the money expended for the station-meters and the new exhauster is to come out of the revenue?

Mr. BECK: No; that is carried to "new works."

Mr. GIESLER: Your new works have cost between £4000 and £5000, and you deduct about one-fourth from income.

Mr. BECK: On the half year we have deducted rather more than half.

Mr. GIESLER: How is it that the cost of retorts during the last two half years has been little more than it was in the previous half year?

Mr. BECK: Simply because they are clay retorts, instead of iron. The one lasts six months, and the other two years.

Sir JAMES DUKE: Is the sum mentioned in the accounts the whole of the bad debts, or only a portion?

The CHAIRMAN: The whole for the half year.

Sir JAMES DUKE: I think the accounts are very satisfactory, except that I understood on the last occasion that the whole income would be divided.

Mr. WM. HAWES said there was evidently some misapprehension about the question of the expenditure of capital, and when the proper time arrived, he should propose a resolution which would have the effect of setting that matter at rest.

Mr. GRAY said he thought he quite misunderstood the feeling of the meeting, if there was one gentleman present who would hesitate to express his cordial satisfaction with the manner in which the company's affairs have been conducted. Mr. Box had complained that the directors had withheld from him certain information; he took it for granted that the directors had acted after deliberation, and believing that they acted for the benefit of the company at large. At all events, he was quite sure Mr. Box was wrong when he said, "Give me the number of tons of coal used, and give me the rental, and I will tell you exactly what profit you are making." He defied the ingenuity of man to do it, without knowing all the expenses. (Hear, hear.) He thought the old proprietors had had cause for complaint, because a portion of the profits had been withheld from them; but the present proprietors, at least, had no ground for dissatisfaction. Where a company had expended its capital, it was right that they should set apart a portion for depreciation;

but where a company had power to call up as much as it pleased, there was no reason for such a procedure. He had much pleasure in seconding the motion for the adoption of the report.

Mr. PERRY observed that he was quite sure the directors were ready to give every information which any proprietor might require, and he thought some reflections which had been made would be very easily removed by giving the rental at each station separately.

Mr. BECK replied that the account was actually prepared in that way, but the directors thought it better not to give those details.

The report was then received and adopted.

Mr. GRAY moved "That the dividend declared by the court of directors be approved and adopted, and be payable by warrants on the treasurer, on and after the 12th of May inst."

Mr. RHODES seconded the motion.

Mr. JOHN BOX thought it was very unwise for companies to be continually raising and lowering their dividends, and that it was best to have a surplus in hand to meet any contingencies that might arise. He moved, as an amendment, "That the dividend be only 6 per cent."

Mr. SHOVE called attention to the fact that last year the amount due to the company was only £57,000, while this year it was £69,000; therefore, seeing that there was now £12,000 more due to the company, he hoped they would be able to continue the dividend as it was now proposed.

Mr. BOX said the £4000 and odd for new works were due against the company. (Cries of "Spoke, spoke.")

Mr. WILLIAM HAWES contended that the whole capital of the company, less the working balance, might be said to be a debt against the company in the same way. It was no more a debt against the company than the original capital.

Mr. GIESLER: It is not "an available asset."

Mr. WM. HAWES: Nor is the whole capital. We do not come here to have our money in hand; we are here to make gas. (Hear, hear.)

The resolution declaring the dividend was adopted.

Mr. BURLS then read the following letter from Mr. Alexander Luard Wollaston, addressed to the secretary:—

My dear Sir,—When I left England last May, I was doubtful whether I should continue to hold the office of auditor, as I intended to be absent for twelve months. I consulted some of my friends who are connected with our company, and the strong opinion which they kindly expressed determined me not to resign my office at that time. A similar opinion expressed by some others induced me to offer myself for re-election in November last. The time is, however, now come when I must resign an office which, with the exception of a short interval, I have held for twenty odd years. As I shall probably be absent from England another year, I feel that the proprietors may consider that I ought not to continue to retain the office. I must therefore beg you to communicate to the court of directors my resignation of my office of auditor. It is with great reluctance that I take this step, as I am unwilling to terminate my official connection with a concern in which my family and myself have so great an interest.

Mr. BECK said he hoped the proprietors would not accept Mr. Wollaston's resignation. Mr. Wollaston's was a name of importance to the company, and he and his family had such a large stock in it for many years, that he was quite sure it would be a benefit to the company to retain him.

Mr. WOLLASTON said his brother's feelings on the subject were, that, as they were bound by the charter to have directors, they were entitled to the service of three auditors.

Mr. JOHN BOX said he could not hold up his hand for the acceptance of the resignation of Mr. Wollaston. It was true their act of Parliament required three auditors; but when, by a recent act of Parliament, the Imperial Company, with their large capital, having formerly three auditors, were now only required to have two, he thought they might very well let the matter remain in abeyance. (Hear, hear.)

Sir JAMES DUKE thought they should convey to Mr. Wollaston their thanks, and request that he would still continue an auditor.

A resolution to this effect was put and carried unanimously.

Mr. BECK said that one reason for his wishing Mr. Wollaston to continue was, that he was so thoroughly independent: and if he thought the directors were wrong, he was sure to be down upon them. (A laugh.) It was a great security to the directors, as well as the proprietors, to retain him.

The CHAIRMAN said the proprietors had been informed by the report that the directors had awarded a gratuity of 5 per cent. to all the officers of the company, by way of encouragement for their past assiduity. He thought it would be gratifying if such a step were sanctioned by a general meeting.

Mr. BOX quite concurred in such a step, because he thought every man ought to be paid for his labour. He proposed to move a resolution to that effect.

The CHAIRMAN thought that was quite unnecessary, but he would take the feeling of the meeting upon it: which was accordingly done, and the result was a unanimous confirmation of what the directors had done.

Mr. BURLS then read the following acknowledgment from the officers of the company:—

TO THE GOVERNOR, DEPUTY-GOVERNOR, AND DIRECTORS OF THE CHARTERED GAS COMPANY.

Gentlemen,—Your resolution of the 11th instant, awarding to us a gratuity of 5 per cent. upon our annual salaries this year, is so very gratifying as to draw forth an immediate acknowledgment.

That those to whom we owe our several appointments should have thought fit to set the seal of their approval upon our past conduct, must ensure new zeal in the company's service. In the hope that this mode of testifying our very sincere thanks will have equal force, and be more convenient to them than if individually presented, we beg to subscribe ourselves, with the utmost respect," &c. &c.

(Applause.)

Mr. GRAY inquired whether that acknowledgement was recorded in the minutes?

Mr. BECK replied that it would be.

Mr. GEISLER inquired whether the workmen were included in the resolution of the directors?

The CHAIRMAN replied in the negative, and stated that they had lately had their wages risen, besides having a gratuity at Christmas.

Mr. WM. HAWES then moved a resolution to the following effect:—"That, very large sums having been transferred from the profit and loss account and invested in shares, in freeholds, in new works, and in mains and meters, it is desirable that the exact value of the property of the company should be ascertained; and that the directors be requested to take such means as they think best to bring the same before the proprietors." He brought forward this resolution because he believed there was great inaccuracy in the ideas of several proprietors as to the actual state of the capital account of the company. He found, upon looking through the accounts, that the original capital of the company was £660,000; that at various times capital had been purchased to the amount of £79,000; thus reducing the capital to £580,000. They had doubled their works and quadrupled their business upon £80,000 less capital than they started with. He believed that was a perfectly unparalleled case in the history of companies of a similar nature. Besides what he had stated, the profits of the company had been appropriated to the purchase of certain shares, which reduced the capital of the company. There had been £93,000 absolutely expended in new works, £45,000 in buying freeholds, £36,000, not in repairing or relaying mains, but in new mains; besides a large sum invested in meters, the ordinary practice as to which was to charge a certain portion of them to revenue. Those sums together amounted to £300,000. It was quite clear to him that the property of the company was really much greater than it appeared in the balance-sheet; and only let that value be known, and he was sure the position of this company would scarcely be equalled by that of any other. The ordinary complaint at all meetings was, "Close your capital account;" whereas the opposite must be the complaint, if any, with regard to the Chartered Gas Company. (Hear.)

Mr. GRAY seconded the motion.

The CHAIRMAN requested that it might be withdrawn.

Mr. GIESLER thought it was very desirable to have some such valuation as that which Mr. Hawes had proposed, in order that they might distinctly understand what was profit and loss, and what was capital.

After a short discussion, Mr. Hawes withdrew his motion.

Mr. BARKER (a director) said, that for a great many years he had kept an account, of which the following was the result:—The capital of the company, as subscribed, was £660,000; the amount taken from the profits of the company and carried to capital had been no less than £246,701. 19s.; making a total of £906,701. There had been invested in plant, £773,389; leaving a balance of capital of £133,312, and of this £79,310 had been purchased; thus leaving a balance of £54,002.

Mr. BECK considered the valuation would be useless, because, suppose a valuer valued the property at more than it was worth, that would do no good; whereas, if he valued it at less, it might do harm, although they themselves would know that the property to them was well worth what they gave for it.

Sir JAMES DUKE said, if the property were valued at £1,000,000, the company would be taxed accordingly. (Hear, hear.)

Mr. BOX could not see that they had saved anything by the purchase of the shares.

Mr. BECK explained that they had saved so much interest every year.

After a few remarks from Mr. Wm. Hawes, the court was made special.

Mr. BURLS read a statement showing that additional capital might be raised by exercising the powers given in the company's latest act of Parliament, by making a call on the shares of the fourth capital of the company of £15 each, which would produce £77,460; secondly, by a reissue of shares purchased at various times by order of the proprietors, namely, 1419 full shares, representing £70,950, and 836 shares upon which £10 each had been paid, being £8360, or a total at par of £79,310. By these means the capital of the company would be restored to what it was originally. The first issue was proposed to be £22,450 of the £50 shares belonging to the first capital, and the whole £8360 of the £10 shares; the second issue would be £28,500 of the £50 shares of the second capital; and the third, if required, £20,000 of the £50 shares of the third capital. The shares to be offered to the proprietors upon terms to be decided, and the issuing to commence at midsummer next, so that the holders might participate in the profits of the half year ending Christmas, 1856.

Sir JAMES DUKE inquired whether the court recommended that the additional capital should be £79,000.

The CHAIRMAN: No.

Sir JAMES DUKE thought it would be better that the court should state what amount they required.

The CHAIRMAN said the first large item was the gasholder, which would cost £14,000, and they had advances from the bankers to the amount of £7000. The first issue would realise £30,000. The proprietors must remember that the company paid for their coals immediately on receipt of the bills of lading, and for every other article that came upon the premises they paid the following week; so that, in fact, they paid ready money for everything.

Sir JAMES DUKE would be glad to be informed whether the additional capital was required to carry on the concern.

The CHAIRMAN replied that £10,000 was required to carry on the concern, and the rest to pay for works which must be paid for within the next three months.

Mr. BECK said, if they sold the shares which were purchased of the first capital, it would realise £22,000; and the sale of the fourth capital, or £10 shares, would realise £8000; making together, £30,000.

Mr. GIESLER thought it was as broad as it was long, whether the company made a call or sold the shares; but, as they had begun by telling them what amount they wanted for new works, he hoped that course would be carried out fully.

Mr. BECK said, the simple meaning of the resolution which emanated from the court was to the following effect:—"That the directors be authorised to reissue, in such manner and on such terms as they may deem expedient, the whole or part of the shares in this company which have been purchased at various times by the authority of the court of proprietors."

A PROPRIETOR thought the best plan would be to sell the shares in the market.

Mr. BECK's opinion was, that a circular should be sent to every proprietor, asking whether they would take the shares, and at what price?

Mr. GRAY considered that their issuing the shares which had been cancelled would damage the company materially. As there were 5164 shares upon which £40 each was due, why not call up upon them, which would give the directors £30,000. He verily believed that to reissue shares which had been considered and treated as cancelled would place the company in great peril.

Mr. WOLLASTON considered Mr. Gray's idea of cancelling shares was a perfect myth. Legally, he believed, they had no power to cancel shares; and they existed in law as much at the present moment as ever they did. A great many shares, upon which £10 only was paid, he believed were held by very poor persons, to whom it would be a very great inconvenience to make any further advance.

Mr. GIESLER hoped that, if the shares were reissued, the directors would not send out a circular, for nothing created so much dissatisfaction as one shareholder meeting another, and learning that he had given 2s. more for his share than another had done. (Laughter.)

Sir JAMES DUKE objected to the directors being left any liberty with respect to the reissuing of shares, and entreated them to take the straightforward course of making a call upon those shares upon which £10 only had been paid.

Mr. RHODES said, he thought it would be better, if the directors reissued the shares, to send a circular to every proprietor, asking how many he would take. He held only shares upon which £10 had been paid, and he refused £20 per share for them until he knew the result of the present meeting.

Mr. HOPWOOD could not understand how they could reissue shares which were cancelled.

The CHAIRMAN said the shares were not "cancelled," but "held in suspense."

Mr. BECK explained that the shares were purchased by two or three directors, as trustees for the company, and they were transferred to them in the books of the company as trustees. He believed the proprietors had legally no power to cancel them.

Mr. JOHN BOX thought, if they reissued those shares which were cancelled, they brought them into the very position from which the purchase of those shares was intended to relieve them, and that it would be a most imprudent step.

Mr. GRAY inquired whether the shares upon which £10 had been paid were issued subsequently to the purchase of the other shares?

Mr. BECK replied that the shares were issued in 1825, and they did not begin to purchase till 1840. He believed the feeling of the proprietors had always been that the directors should not make a call if they could help it.

Mr. WOLLASTON said it seemed to be assumed that the only legitimate way of acting was to make a call upon the shares not fully paid up. He believed the only illegitimate thing the company had done was to pretend to cancel shares.

Mr. WM. HAWES said it seemed to him that the word "cancelled" meant purchased interest; and that the shares were transferred, in the books of the company, to A, B, C, and D, in whose names, *quoad* the books of the company, they still stood. He therefore was of opinion that the best plan was to reissue those shares, and he should move the resolution which Mr. Beck had read.

Mr. SHOVE seconded the motion.

Sir JAMES DUKE inquired whether the shares were cancelled and destroyed?

Mr. BECK said, that after the resolution that they should be cancelled, they were crossed out in the books of the company; but he maintained that the proprietors had no power to get rid of that capital, which had been raised under the act of Parliament. The only reason why the proprietors were asked to sanction it was, in order that they might not afterwards turn round and tell the directors that they had done it without their authority.

Mr. GRAY: You were doing an illegal act with your own knowledge.

Mr. BECK: But you all agreed to it.

Sir JAMES DUKE considered it most injurious to any board to traffic in shares.

Mr. GRAY suggested that the directors at least should be limited as to the amount for which they should reissue the shares.

The resolution, amended by the insertion of the words, "not exceeding £50,000," was then carried.

Mr. GRAY moved a vote of thanks to the directors, which passed *nem. dis.*, and terminated the proceedings.

ON THE PRINCIPLES OF TASTE APPLIED TO GAS-FITTING.

BY G. R. BURNELL, ESQ., C.E.

(*Lecture delivered, May* 1, *to the Members of the Gas-Fitters' Mutual Association.*)

Dr. BACHHOFFNER took the chair at eight o'clock, and, in a few appropriate remarks, introduced

The LECTURER, who said: In presenting this subject to your notice, I wish to offer one or two remarks by way of explanation. In the first place, throughout my observations I have always used the first person, and I have done so simply for this reason, that I do not wish to lay down any abstract principles, but rather to explain my own views upon the matter. There is still so much doubt on all these questions, that it would be exceedingly absurd for a person like myself, who has not much to do with questions of taste, to attempt to lay down absolute laws in reference to it. In the second place, I have made frequent allusions to the practice of the French; and I have done so, not because I agree entirely in their opinions upon many points, but I believe that they reflect and think a great deal more upon these subjects than we do, and that it would be well for us to take a lesson from what they have done. I have now to address you upon the principles of taste as applied to ornamental gas-fitting.

There is a saying in the mouths of all the world, that "there is no disputing about tastes." Like most aphorisms, this one must be considered to be only partially correct; and at any rate experience shows that, practically, mankind is not disposed to yield implicit consent to its literal truth, because it would be hard to name a subject upon which there have been more disputes than upon questions of taste. Beyond doubt, there are certain principles in our mental constitution which remove from our own will the decision with respect to the fitness or beauty of certain objects; so that in cases in which they are concerned, our judgments are involuntary; and then, indeed, it may truly be said that "There is no disputing about taste." But in reasoning upon the objects which surround us in daily life, we rarely have occasion to appeal to first principles; and even when the ultimate decision upon the greater or less conformity of such objects to the abstract laws of beauty would be necessary, in order to enable us to decide upon their relative merits, so many incidental and modifying circumstances intervene, that it becomes hard indeed, if not impossible, to prevent differences of opinion. In the case of the application of principles of taste to any of the arts connected with the satisfaction of our ordinary wants, the difficulties which surround the subject are increased by many local or accidental considerations, and it becomes almost impossible to lay down any laws of so absolute a character as to be worthy even of that name.

With regard to the designing of gas-fittings, it strikes me that these remarks require particularly to be borne in mind, in order to guard against even the appearance of dogmatism; and I am anxious at the very commencement of my paper that you should understand that I desire in nowise to lay down any absolute or invariable canons of taste. In the first place, it must be evident to any one who is aware of the position in which the gas-fitter stands towards the public, that it is only occasionally that he is consulted with respect to the taste of the articles he is to fix. Patrons and their professional advisers, generally speaking, leave your profession, gentlemen, little opportunity for suggestion, or for the exercise of your judgment. In the second place, even supposing that you are left to decide upon the character of the fittings to be applied, you must always be limited in the sphere of your choice by the style of decoration adopted in the building to which it is proposed to introduce the gas. There are some styles of architecture which I confess myself I do not admire; yet, if you should not conform to them occasionally, you would expose yourselves justly to criticism; for, although the artists of the best periods often neglected to design the ornaments they introduced in the same spirit with the style of the original building in which those ornaments were to be placed, yet the discordance of effects thus produced is so evident, that at the present day it may boldly be asserted—notwithstanding the objection above stated to dogmatism—that invariably new fittings ought to be designed in the spirit of the building they are intended to ornament. It is true that gas-fitting, being a new art, we have no models of such works executed in former days; but it should be the object of those who are called upon to design this class of ornament to imbue themselves so thoroughly with the spirit of the age, or style of architecture adopted, as to avoid the appearance of anachronism. The main difficulty which you, like all other art workmen, have to contend with is, however, after all, to be found in the state of public taste; and, until that shall become purer and better than it is at the present day, it is in vain to expect that any marked improvement can take place in the style of work you are connected with. Yet, as in many cases you are appealed to for advice in the selection, and at all times have the power of suggesting the fittings to be used, it may be advantageous for you to revert occasionally to the discussion of the abstract principles of Taste as applied to your art. You may often influence decisions, when it is not your place to advise directly: at any rate, it is desirable that you should habitually reason upon the philosophy of your every-day pursuits.

The questions of taste, as applied to gas-fittings, are of a twofold nature; those connected with the mode of distributing the light, and the quantity to be so distributed, and those connected with the ornamentation of the utensils of distribution.

The mode of distribution, and the quantity of light to be furnished, must depend upon the purposes to which the building or room to be lighted is intended to be devoted. A dining-room, for instance, requires less light than a ball-room; a lecture-room less than a theatre. In a jeweller's shop the light requires to be very different in quantity and in direction from that necessary in a linendraper's, in order to show off to advantage the wares in either of them; whilst, at the same time, the prevailing hue of the surrounding objects, or the existence of walls able to reflect, or of glass to transmit, the light, all require to be taken into account before any decision can be arrived at upon these subjects. With wall decorations of a light colour, a 30-hole argand burner, working under the ordinary pressure, and consuming 8 cubic feet per hour, will very satisfactorily light a sitting-room containing about 90 cubic yards, especially if there be a good fire in the grate; but in a ball-room, or in an office where several people may be at work, it would be necessary to increase this proportionate supply of light to a remarkable extent. In some of the most comfortable dining-rooms I have seen, the lights have been applied as brackets against the walls; but when, as is usually the case in our town houses, the rooms are narrow, and the walls are covered with pictures, it becomes necessary to use central chandeliers. In drawing or ball-rooms, it strikes me that all side lights ought to be avoided, because cross lights are decidedly trying to the good looks of the company; and, again, the central chandelier serves to break the monotony of the open space which would otherwise be left. A much more pleasing effect than is usually produced might, I think, be easily attained by giving a very slight rosy tint to the glass shades used in reception-rooms; but the light blue glass introduced a few years since gives to every object so deadly a hue, that I venture to transgress my own reserve in order to record my protest against it. In our London shops there is usually a blaze of light, which is rather painful to the eye than adapted to display the goods favourably; but, after all, the judgment of the shopkeeper may be more safely consulted in these matters than any theoretical or *à priori* reasoning. I may be allowed, perhaps, to cite as a very successful model of lighting a linendraper's shop, that of Messrs. Rumbell and Owen, at the corner of Winsley Street, Oxford Street; and this shop is the more worthy of notice because the mode of lighting, by strong solar lights, is made at the same time to assist the ventilation. There is one occasional defect about it, however, to which attention may be called, as illustrating the numerous principles it is necessary to bear in mind whilst designing even so simple an affair as the lighting of a shop is supposed to be; it is, that whenever the wind blows strongly from the south-west, the flame and the current of ventilation are reversed; the outlets of the heated air require to be sheltered, in fact, from the disturbing action of the wind. Generally speaking, as I said before, our London shops are over-lighted, and it would be well if the artists employed to design them would study the example set by our Parisian neighbours, who certainly exhibit remarkable skill in dressing up their scantily filled shops in a far more captivating style than we usually manage to do with the extraordinary collections of our wealthy tradesman. The French artists have also at times shown themselves to be superior to our own in the management of the lighting of their theatres; and by avoiding, in the best examples, the use of brackets applied to the face of the boxes, they secure to the audience the advantage of a diffused overhead light, which is at once the most pleasant and the most becoming. This last remark would apply, of course, to all places of public resort where the persons assembled did not require to see very distinctly; and the fitter or the artist who designed the lighting of the Philharmonic Hall of Liverpool appears to have borne it in mind. In this case the light is distributed by means of a pipe resting upon the upper member of the cornice supporting the coved ceiling, which pipe is pierced with a number of small jets. Possibly this mode of distributing the gas, although very expensive, may be superior to that in which central chandeliers are used, because the latter concentrate the light in too powerful a manner; but I should be inclined to fear that the flame would be unsteady, and that, unless the gas were remarkably pure, it would rapidly destroy the decorations; besides this, the use of a large central chandelier affords great assistance to the execution of a system of ventilation.

In lighting churches, however, a very different system of distribution appears to be required from that adapted to other places of resort; and the peculiar form of worship will also render it necessary to vary still more these details. Thus, in the vespers of the Catholic Church the greatest amount of illumination is required near the altar, and the rest of the building may be left in a "dim religious light;" whereas, in the evening service of the Church of England, and of most forms of Protestantism, it is necessary that every member of the congregation should be able to read easily. One general principle appears, however, to be applicable to all these cases—and, indeed, to every description of illumination—viz., that the burners should be placed above the eyes of the congregation or audience, and that all cross-shadows should be avoided. In practice this principle is sufficiently attended to; but, unfortunately, neither architects nor gas-fitters attach sufficient importance to the ventilation of buildings or rooms lighted by gas, and much of the prejudice which stills prevails against its introduction must be attributed to this neglect. No intensely white artificial light can be obtained without the combustion of large quantities of oxygen, or without the evolution of much heat, thus rendering imperative a frequent and perfect renewal of the air. I believe, therefore, that I am rendering you a service by urging you to attend seriously to this indispensable condition of a successful distribution of gas, although its consideration may not be directly connected with questions of taste as applied to gas-fittings. I do not propose, however, to exercise the same freedom with respect to the discussion of the influence of the phenomena of combustion upon the quantity of light produced, nor upon the best form or dimension of the burners—although I shall hereafter again allude to these questions—because, firstly, they have been already remarkably well treated by Messrs. Christisson and Turner, so far back as 1816; by M. Peclet, in his "*Traité*

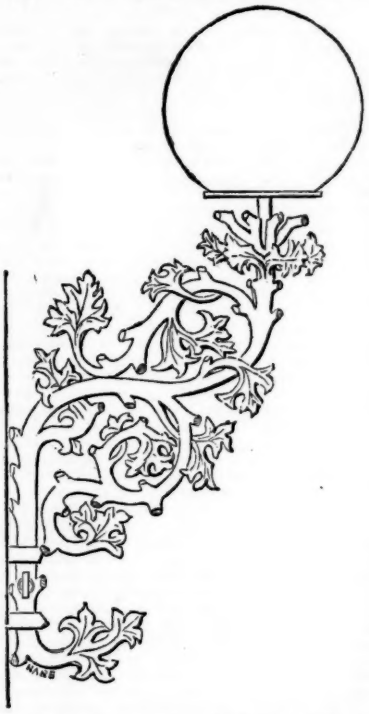
de l'Eclairage," 1822; and by M. d'Hurcourt, in his elegant little treatise, "*De l'Eclairage au Gaz*," 1845; and, secondly, because it is to be feared that these abstract scientific discussions would cause us to lose sight of the principal object before us at present.

It is more easy to apply the recognised canons of taste to the ornamentation of the utensils of distribution than it is to lay down any general laws with respect to the proper quantity, or to the precise manner, of the distribution; because the modifying circumstances are fewer, and because they are, so to speak, less imperative. It is true that, whatever style of architectural decoration may be adopted in a building or room, the gas-fittings must be in strict accordance with it; and to this extent, perhaps, the modifying causes may exercise quite as great an influence as the purposes to which the gas-lighting is to be applied have already been shown to exercise. But, even when the style of decoration is prescribed by the general character of the building, the precise details of the gas-fittings must be left, after all, to the judgment or taste of the artists connected with them, because the art thus brought into operation is of recent introduction, and there are no unbending traditions to bind men's minds. Under such circumstances, the ultimate judgment to be formed upon questions of taste as applied to gas-fittings must depend upon their conformity to abstract principles, so far as they apply to these matters—always bearing in mind the reservations previously made on the score of satisfying the public taste of the day; for, however firmly a man may believe that the public is mistaken in its opinions on such subjects, it is absurd to attempt violently to oppose it on any abstract principles. But let this be as it may, and without entering upon any discussion as to the amount of deference to be paid to public opinion, I think that all must agree that, unless gas-fittings are designed truthfully, and with reference to the ordinary laws of colour and outline, they must fail to produce the full effect of which they are susceptible, or must be positively objectionable.

I cite, firstly, the quality of truthfulness, because I am convinced that it is the most essential element of beauty in art. Of course I do not mean that every pipe is to be shown, or to be brought into painful evidence. Nature herself does not make any such unnecessary display of the veins or sinews of the animal frame. On the contrary, they are hidden and protected in such a manner as to secure, not only an efficient discharge of their respective functions, but also the most pleasing appearance. But, if we continue this comparison, we shall find that in natural objects nothing is introduced which is not necessary to secure the safety or the perfect action of the organ so supposed to be adorned: in no case whatever do we find that Nature applies to one set of circumstances the same mode of ornamentation which had been originally adapted to others. Everything in nature—every detail, in fact, of the organic or of the inorganic world—is either indicative of, or is made to co-operate with, the essential functions of the object with which it is connected; and nothing is in vain—nothing is added which, to use a cant phrase of the day, can be stigmatised as "a sham." The same principles ought to be adopted even in our humble sphere, and we should aim at making our productions equally characteristic indications of the purposes they are intended to perform as Nature has taken care that her productions shall be. Gas-fittings should never be made to look like anything but gas-fittings. Let them be as ornamented or as ornamental as you will. All imitations of oil lamps, wax candles, or other trumpery of the kind so often exhibited in many of our best buildings, ought to be carefully avoided. They are "shams" in every sense of the word, and as such they must be offensive to every well-constituted mind, even supposing that the ornaments with which they are connected are in themselves elegant or beautiful. This said imitation of oil lamps is one of the most common errors of the parties who are usually consulted in questions of gas-fittings, and is, I think, the more decidedly objectionable, because the introduction of the rigid, straight, descending pipe, evidently displays the falsehood of the whole design, and at the same time destroys the effect of the central reservoir. It is true that in every chandelier it is necessary to fill the portion of the composition from which the branch-lights spring; but of course this ought to be done in a manner which should be suggestive (to use another cant phrase) of the real object it is desired to effect: certainly not in a manner suggestive of a style of illumination now discarded The same remarks may be extended to the imitations of cords, tassels, knots, &c., which are so much the fashion in France at the present day. They are essentially untrue, because things of the description represented cannot be executed in metal, and nothing but metal could be used to distribute gas under the circumstances thus intended to be represented. "Let no such things be imitated."

By the way, I must apologise for using the word "chandelier" for a large central gas-burner, inasmuch as, properly speaking, that word is only applicable to a receptacle for candles—"a candlestick, apparatus, or instrument employed in the use of candles or rushlights," to quote the words of a patent, registered Nov. 25, 1842. Unfortunately, we have no recognised English word to express a central gas-burner; and perhaps I might be allowed to suggest, and to use in future, that of "lustre," to convey that meaning! The word is already English, and it has been used in the sense I now seek to attach to it.

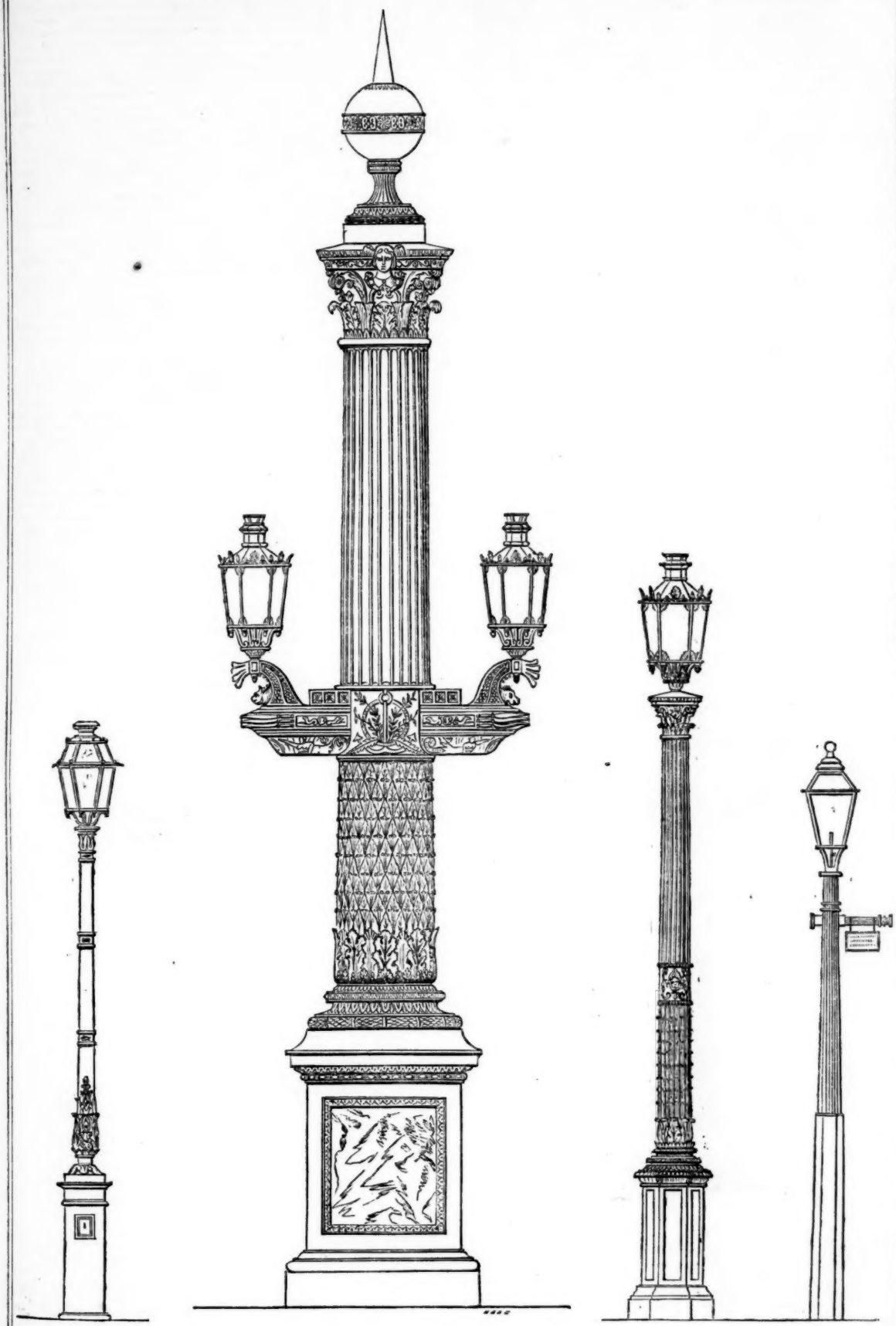
It far too often happens that, when our gas artists depart from the imitation of the old oil lamp, with its large central reservoir, they fall into the opposite extreme—viz., that of contenting themselves with a more or less ornate arrangement of straight pipes. Very rarely, indeed, does it happen that the intersection of right lines at right angles is pleasing to the eye, for there is a stiffness and formality about such an arrangement of the parts of a design which is very offensive on a small scale, and is only tolerable on a large scale, when the magnitude of the object is such as to render it impossible to dwell upon detail. Thus, in the tubular bridge over the Menai Straits, the simplicity of the leading lines of the composition is, beyond doubt, one of the elements of its sublimity. But this principle ceases to be applicable in the cases of a single or of a 2-light gas-lustre, and the bare ⊥ or ⊾ forms, at the same time that they may be the most economical, and, so far, the most strictly logical, are also about the most inelegant which could be devised. Again, the same thing may in substance be said of the brackets applied against walls; for it is impossible to conceive anything more disagreeable to the eye of an artist than the usual straight tube placed at right angles to the wall. In the latter case, moreover, the effect is, generally speaking, rendered still more objectionable by the interposition of the swivel-joint and the seating for the stopcock. There is no absolute necessity, however, for the preservation of these rigid straight lines, as I think will be apparent to any one who will examine the drawings or engravings upon the table, or to the wall-brackets or church-standards which I have copied or adopted from M. Pugin's works;* and this is precisely one of the



cases in which you, gentlemen, can lead the taste of your customers, by laying before them models in conformity to the principles of art.

In what I have previously said, my opinions with respect to the introduction of china, earthenware, or opaque vitreous substances, are implied. Generally speaking, they are used in such forms, and under such circumstances, as to bring them under the category of "shams;" and unless resorted to for the purpose of keeping out of sight the offensive nakedness of the gas-pipes, I think that everything of this kind is to some extent objectionable. There are, however, occasions when it is desirable to conceal the means of effecting the distribution of gas, just as Nature conceals the veins and arteries of our bodies; but whenever such occasions arise, it is essential that the mode adopted should be in strict harmony with all the conditions around it; and, at any rate, that the colours of the enveloping substances should not offend against the laws of what may be called optical harmony. In some of the gorgeous gin palaces of our immense metropolis, you will find illustrations both of the principles I advocate on this subject, and of the defects I protest against. Occasionally the feed-pipes are masked by vitreous substances in harmony with the colouring of the shop, and with the smaller fittings; but far too often the colours used appear to have been selected solely on account of what is commonly called their "staring" nature, and they are utterly without reference to the

* The elaborately executed drawings, and the pattern-books of the principal French manufacturers, of gas-fittings and ornamented iron-work, were the subjects of universal admiration; and the lecturer kindly complied with the request of several persons to allow a more careful inspection of them at his offices, No. 14, Lincoln's Inn Fields.



Street Post.

PARIS LAMP PILLARS.
Place de la Concorde.

Champs Elysées.

MANCHESTER
Street Posts.

tone of the objects around them, or to the detailed fittings. Thus it is by no means rare to see a brilliantly white pillar upon a dark mahogany ground, with brightly burnished or gilt brass branches; in other cases, pillars of a bright apple green are used in conjunction with dead brass furniture, and the whole is fixed upon a light wainscoat-coloured ground; whilst in others, again, inexplicable vases are surrounded by desperate attempts to imitate leaves, berries, and twigs, upon which ridiculously tame-looking birds are supposed to be feeding. Of course, as "they who live to please must please to live," you cannot be held responsible for the choice or for the bad taste of your customers; but there is an action and a re-action in all these matters; and, if you were carefully to reflect upon the more than equivocal taste of many of the works you habitually execute, I am convinced that, with the usual tact of London tradesmen, you would soon find the means of convincing your employers of their mistaken opinions. In places of the description I have mentioned it would be absurd to seek for refined artistic excellence; but there is not, therefore, any reason why the decorations should offend against all artistic laws; and it is your duty, as far as in you lies, to guide public taste in these matters. As a general rule, you have more influence over the class of employers to whom I allude than architects have, and the improvement of their particular taste is so far in your hands. If you bear in mind that fitness, truthfulness, and harmony of colour are indispensable conditions in your branch of the arts—as in all others—and if you really *think*, I have no fear of the ultimate destinies of your art.

A few years since there raged a mania for what was called the imitation of natural objects. It lasted but a short time in the higher branches of architecture; but, unfortunately, it lingers still amongst the gas-fitters, and is responsible, amongst other follies, for the brass leaves and china berries just alluded to. The fact is, that the rigidity and the immoveable character of all the metallic decoration place it beyond the province of literal imitation of natural objects, and necessarily impress upon it a conventional character totally at variance with the freedom and soft, yielding grace of trees, leaves, and flowers, as they actually occur. Of course it must be understood that ultimately all our notions of ornament must be derived from objects of the external world: but the system I now protest against is the exaggeration of this principle; and it appears to me essentially false, because of the manifest impossibility of fixing externally the ephemeral beauty of the plant, or the restless activity of the bird "rejoicing in the flowering thorn." It is a modification of the bad taste now in fashion in the higher classes for painted sculpture and excessive polychromic external decoration; and in all these cases it proceeds from a mistaken view of the real province of the imitative arts, which ought rather to aim at suggesting ideas, than at servilely imitating the objects they seek to represent.

It must not, however, be supposed that, because I object to the manner in which the china or vitreous ornaments are so often applied, that I object to them "*in toto*." Very far from it. They are often susceptible of being very elegantly and very successfully applied; the conditions to be observed with respect to such application being, that they should accord in tone and colour with the other decorations around them; and that they should be introduced in conformity to the dictates of common sense—a quality which is a far surer guide in all questions of taste than writers upon art would induce us to believe. For my own part, I confess that I admire exceedingly the lustres or wall-brackets in which the pipes of white metal are sheathed by cut glass; and this material has the additional advantage of reflecting the light in many agreeable manners. All coatings of this description present a strong recommendation in the ease with which they are cleaned, and the protection they afford to the tubes beneath them. The great error which has, I think, hitherto pervaded their application has arisen from the undue importance attached to them, and from the fittings into which they enter being designed more with a view to display the china or glass ornaments prominently, than with a view to their introduction as accessories to the distribution of the gas, which is, after all, the main object aimed at.

There is great room for improvement in the forms of the fittings used externally, and, perhaps, also for some alteration in their materials. The lamp-posts to be seen in the greater number of our streets are as totally devoid of elegance as it is possible for them to be; and there is usually about as much taste displayed in their outlines as there is in the foot paving or the granite curbs to which they are attached. Even the colour of most of them is unpleasant in the day time, and is as objectionable as their form. That there is no occasion for this baldness and inelegance must, I think, be evident to any one who will compare some of the designs for lamp-posts upon the table; and though it may not be advisable at all times to make them as ornate as those executed for the *Place de la Concorde* in Paris, yet I am sure that everybody will agree with me that the post adopted by the municipal authorities of the cotton metropolis, Manchester, is as discreditable to their taste as anything can be. The commoner lamp-post of Paris now exhibited seems to me to be more worthy of general imitation than any other I am acquainted with; and, indeed, when it is considered that, after the cost of the first model has been defrayed, there would be little or no difference in the price per cwt. of the metal required for the usual abominations placed in our streets, or for the more elegant form adopted elsewhere, I cannot understand why our taste should be continually offended by the repetition of the usual forms. We are not, as a nation, fortunate in these matters; and the ornamental lamp-posts, as they are called by courtesy, of Trafalgar Square, or, to cite a more recent example, of the statue of Sir Robert Peel, are very far indeed from being worthy of imitation or admiration. These objects, however, are, strictly speaking, more within the province of the architect than within that of the gas-fitter; but the external lamps which are now so often used to throw light upon goods exposed in shop windows, and again in public houses—for unsublime as those houses may be, they manage to thrust themselves most prominently into public notice—are quite within the limits of your pursuit; and it may therefore be worth while to call your attention to the singularly ungraceful outlines usually given to the feed-pipes, and to the lamps and reflectors; whilst it far too often happens that the dimensions of the lamps are such, that the wind, during the frequent gales of our latitude, causes them to swing about in a manner which appears to be extremely dangerous.

When I said that it appeared to me that some modification or alteration in the materials used for external lighting might be effected, I alluded more particularly to the introduction of reflectors; for it is evident that much of the artificial light we endeavour to apply is allowed to pass into space without producing any useful effect. This is, however, essentially a practical question—one in which taste has, perhaps, little to do; but it is one worthy of serious consideration on the part of those who are interested in the extended application of gas lighting, for evidently it must be of importance that the utmost useful effect should be obtained from the gas consumed. The effect produced by the application of gilding to the lamps upon the *Place de la Concorde* in Paris, already referred to, upon the iron railing of the British Museum, and upon the lamps near Sir R. Peel's statue, induces me to believe that it would be desirable occasionally to depart from the exclusive use of iron posts and brackets externally—observing always not to offer temptations for theft or mischief. In such situations as railway stations, it would be possible to display great taste in these matters; but an examination of the last one erected in London, the Blackwall Station, shows that, if much may have been done of late years to improve the taste of our gas-fittings, "still more remains to do." The gas-pipes are there displayed in all their naked deformity, and in a manner which is almost ludicrous. The fittings in the great hall and in the waiting-rooms of the North Western Railway are of a far more satisfactory character; and, although of course I am aware that the circumstances under which they are applied are different, I do contend that the amount of thought bestowed on these objects in the last named station contrasts strongly with the carelessness with which they are treated in the other.

I would call your attention to the manner in which the illuminated clock of Mr. Bennett's house in Cheapside is lighted, as illustrating the occasional application which may be made of the philosophical laws of optics to your business. Generally speaking, the faces of illuminated clocks are light, whilst the hands and the figures are dark. In Mr. Bennett's clock—which, by the way, is similar to the clock erected, about 1845, at the Museum of Havre—the face of the dial is dark, and the figures and hands are illuminated; and I can speak practically as to the fact that it is possible to distinguish the hour at a much greater distance by means of these clocks, than it is by means of the ordinary ones our parish authorities seem disposed entirely to abandon. The mode in which this illumination of the hands and figures is effected, is simply as follows:—The dial-plate and the hands are of glass, the latter being enclosed in a species of metal skeleton frame; the figures are painted upon the glass with a thick white translucent paint, of a highly refracting power, which is also applied to the back of the hands; and behind the glass a black cloth is stretched, at an angle of 45° from the top. In the day time, of course the face of the clock looks black, and the figures a dull white; for the rays of light pass through the plain glass, and are absorbed by the cloth, whilst they are partially reflected by the figures and hands. At night, the light is given by means of a row of gas-burners placed at the foot, and a little below the margin, of the glass. The rays of light from them, which impinge upon the plain glass, are of course only slightly deflected from their path, and are lost in space; whilst the rays which impinge upon the highly refracting medium of the hands and figures are deflected to the eyes of the spectator. There must be many occasions in practice where the laws of dioptrics might be similarly applied; and the remarkable results obtained by Messrs. Fresnel and Stevenson, by the application of the principles of catoptrics to lighthouse illumination, show that the field is still open to the application of even the most abstruse branches of science to the details of your profession.

In another respect, too, it strikes me that there is room for the application of practical science to gas-fittings; I mean, that I think further experiments than those of Messrs Christisson and Turner are required upon the effects of particular-shaped burners; and that, by some modifications in the shapes and arrangement of the apertures, it would be possible to secure some pleasing artistic effects, and to increase occasionally the amount of light obtainable from a given quantity of gas. In one of the public gardens of Paris pipes are laid in the midst of some dense but short grass, and are pierced with holes, through which the gas escapes in such a manner as to burn with a flame strikingly like the shape of a crocus; and the effect is, I assure you, exceedingly pleasing. We, however, seem to content ourselve with the argand burner, the fishtail, or the batswing lights, and to seek no additional ornament from a source so simple and, I had almost said, self-evident; for even Accum, in his "Practical Treatise on Gaslight," published in 1818, alludes to the ease with which "the gas-flame may be exhibited under such variety of form and design as cannot fail to give rise to the most tasteful ornamental illumination." The practical difficulty in this matter arises from the impurity of the gas usually delivered, which renders it necessary to introduce bell-shades; but, as if open lights were more used, the manufacturers would soon be compelled to pay greater attention to the quality of the article they distribute. I would urge you not to neglect this very easy mode of securing artistic decoration.

I may, perhaps, be allowed to resume the opinions I have submitted for your consideration as follows:—

1. That, whatever gas-fittings are introduced, they must correspond strictly in character with the decorations of the room in which they are placed, and must be entirely in accordance with the general style of ornamentation adopted, and in harmony with its tone and colour.

2. That, as in all decorative art the effect should, strictly speaking, be obtained rather by the form and outline of the ornaments than by the adventitious aid of coloured materials, it would be preferable to confine your attention to the ornamentation of the materials absolutely necessary for the distribution of the gas, in so far as that can be effected by the modification of their outlines, rather than to seek for variety by the use of china, or of any vitreous substances.

3. That, when it may be advisable or desirable to use this last-named description of materials, especial care should be taken to ensure a perfect harmony of colour both by day and night.

4. That the imitation of natural objects be avoided.

5. That the general outline and detailed ornaments of gas-fittings should be carefully studied, so as to avoid the introduction of any combinations of lines which should offend against the usual laws of composition known to prevail in other branches of the arts. But, before all and above all, it is essential that it should be the aim of the gas-fitter—as it ought to be of every other artist—to make his productions the exponents of a truthful, consistent, and reflecting mind. Constantly struggling to attain perfection, he should take lessons in every school; but he should think and act for himself, if he desire to be considered an original, or even a conscientious, artist: and, believe me, that no man can ever be even what is called a good tradesman, unless he possess a considerable degree of the truthful artistic feeling I seek to recommend. My last words are, "Be true." Sooner or later refinement of taste will follow, if it do not already exist. It can never really exist unless you "be true.'

At the close of the lecture,

The Chairman made a few observations. He said there was one feature in the present case which they would not often have to complain of, and that was that the paper just read was much too short. He had listened to it with much pleasure, and he considered they were much indebted to Mr. Burnell for the excellent service he had rendered them. One thing had struck him in the course of the lecture which, though a a small matter, was worthy of consideration, and that was the suggestion to employ a rose tint in gas-glasses. If the idea were carried out, it would help to take off that ghastly appearance which was sometimes imparted by gaslight. He quite agreed with Mr. Burnell in thinking that the neutral tint, or London smoke, as it was called, was most objectionable. The idea of making artificial light

still more blue, rather than of a warm ruddy tint, was an erroneous one. True, for optical purposes, if you could reduce it to a pure white light, so much the better; but a moonlight effect was not a desirable one for general purposes. Another observation had reference to the Liverpool or sun burner in the shop in Oxford Street. That was a mode of shop illumination which had many advantages, but it had also many disadvantages. The sun burner was a most efficient ventilator, but its effect upon the general appearance of the goods exposed beneath it was anything but what he liked to see. In his opinion, the more the light was diffused, so as to prevent the cutting up of shadows, the better.

After a few remarks from a gentleman in the room upon some instances of false taste in gas stoves, &c., the proceedings closed with a vote of thanks to the lecturer, and an intimation from the chairman that the next lecture would be delivered by Mr. Lewis Thompson, on Thursday, the 15th instant.

THE GAS QUESTION IN HEREFORD.

At the Meeting of the Town Council of Hereford, held on the 7th inst., the MAYOR read the following report from the committee appointed at a former meeting to treat with the Hereford Gas Company for the gas-works and the property connected therewith. Mr. Shellard left the room, remarking that he could not take any part in the discussion which might ensue, and that it would perhaps be better that he should retire.

The committee report that they have held several meetings with the committee of the Gas Company, and, in pursuance of a resolution agreed upon by the two committees, their solicitors have, under the advice of counsel, prepared a draft agreement for purchasing the gas-works, messuage, and premises, and other property thereto belonging, in the occupation of Mr. Thompson, as lessee thereof, at such valuation as shall be agreed upon by two gentlemen—one to be named by the Gas Company and the other by the corporation—with power for them to name an umpire to act if necessary.

That your committee have named George Flintoff, Esq., of 46, Renshaw Street, Liverpool, as arbitrator on the part of the corporation; and the Gas Company have named Thomas Greaves Barlow, of 3, Parliament Street, London, as arbitrator on their part; but that, since the making such nomination, your committee have been informed by the solicitor to the Gas Company that Mr. Barlow declines to meet Mr. Flintoff on the business, and have been requested to substitute another person as arbitrator in the place of Mr. Flintoff.

That, in consequence of the reasons assigned in a letter from Mr. Barlow, and read by Mr. Lanwarne, the solicitor to the Gas Company, together with the representations of Mr. Lanwarne and Mr. Shellard, as to the inefficiency of Mr. Flintoff for the office of arbitrator, your committee have withdrawn Mr. Flintoff, but have thought it advisable to take the opinion of the council previously to naming another arbitrator.

Your committee append a copy of Mr. Barlow's letter to this report.*

Under all the circumstances, therefore, your committee are of opinion that the Gas Company should withdraw Mr. Barlow as their arbitrator.

Mr. BALLARD: Not having been able to attend the meeting of the committee, I should like to ask whether it was upon the letter of Mr. Barlow that they recommended the withdrawal of Mr. Flintoff?

The MAYOR: Mr. Lanwarne and Mr. Shellard (the latter gentleman one of the committee of gas proprietors) attended the meeting; and Mr. Lanwarne, producing a pamphlet of which Mr. Flintoff is alleged to be the author, said it contained obscene matters. In fact, I observed to him (Mr. L.) that if one-half of the imputations that were made upon Mr. Flintoff's character by him, and Mr. Shellard, and Mr. Barlow were true, it would be disgraceful to the city to have such an arbitrator. The committee considered these facts sufficient to recommend the withdrawal of Mr. Flintoff.

Mr. HATTON said that, as this discussion would go into the public prints, he wished to state that he had had a correspondence with Mr. Flintoff on the subject, and that that gentleman denied *in toto* being the author of the pamphlet, or that he ever lived in Fleet Street, or that he ever sold the pamphlet to Mr. Barlow. He (Mr. H.) only regretted that he had not been earlier in possession of these facts, so that he might have met the serious charges made by Mr. Lanwarne and Mr. Shellard against Mr. Flintoff at the gas meeting which took place on Thursday last. The real and true facts, he believed, were that Mr. Flintoff was similarly engaged sometime ago at Blackburn, and in order to attempt to damage him there, his opponents republished 2000 copies of the pamphlet referred to, which they attributed to him, and to which they put his name, and circulated it throughout the town. But they did not succeed, for the Town Council saw through it; and he (Mr. H.) had in his possession a Blackburn paper containing a report of observations made by different members of the council, and showing that Mr. Flintoff carried the day, and received a vote of thanks.

Mr. POWELL said it appeared that Mr. Barlow and Mr. Flintoff had taken up very opposite views, and therefore, if they had met, it was only reasonable to suppose there would have been a very great difference of opinion entertained. As to the charges made against Mr. Flintoff, he knew not whether they were true or false; but he thought that when the Gas Company suggested the withdrawal of Mr. Flintoff, it would have been but good taste at the same time to have withdrawn their own arbitrator, and then two fresh ones could have been nominated.

The MAYOR: We were censured in very strong language by the Gas Company's solicitor for appointing Mr. Flintoff, and Mr. Shellard said they had refused to withdraw Mr. Barlow; but the matter was to be reconsidered at a meeting to be held yesterday.

Mr. POWELL: It would be desirable to start in an amicable manner; but this is not likely to be the case if they reject our arbitrator, and won't withdraw their own. I am sorry that the committee have withdrawn Mr. Flintoff before bringing the subject before the general board.

Mr. HATTON: It is for this board to confirm the withdrawal or not. We have come here for advice.

The MAYOR: Could any private individual, in the face of Mr. Barlow's letter, appoint a man whom, it is stated, "no respectable person can meet."

Mr. COURT said, a proposition that was made to the Gas Company, that if they would withdraw Mr. Barlow, the council would withdraw Mr. Flintoff, was met with a direct negative by Mr. Shellard. It was now for the board to say whether or not Mr. Flintoff should be withdrawn.

Mr. GEORGE had understood the impression of the committee was that, unless the Gas Company withdrew Mr. Barlow, the council ought not to withdraw Mr. Flintoff.

Mr. JAY: In accordance with the recommendation of the committee, I propose that the council withdraw Mr. Flintoff.

Mr. PARKER: On what ground?

The MAYOR: On the alleged ground of his not being a respectable person.

Mr. PARKER: I think we should call upon the Gas Company to state what are the charges against Mr. Flintoff, and if he cannot answer them, then will be the time to withdraw him.

Mr. BODENHAM said that the council had not the means—if they felt inclined to enter upon the task—of determining which was the more respectable man of the two, Mr. Barlow or Mr. Flintoff—whether either or both were respectable or disreputable. There seemed to be some strong charges made on both sides; but he thought the course to be pursued was for the council and the Gas Company, without entering into those charges, to endeavour to nominate two men who would be likely to come to some decision. It was hardly possible that two men so much at enmity as Mr. Barlow and Mr. Flintoff evidently were could come to any proper or just decision if they were to meet. He would propose the following resolution, which he thought would meet the views entertained by the council:—

That this board does not acquiesce in the imputation cast upon Mr. Flintoff by Messrs. Barlow, Shellard, and Lanwarne, and that the request to withdraw the name of Mr. Flintoff be only acceded to on the express condition that the Gas Company withdraw Mr. Barlow.

This proposition was unanimously adopted.

* A copy of Mr. Barlow's letter was appended to the report; but, as it will be seen from the following letter that its publication is threatened to be made the ground for an action, our readers will comprehend our motives for declining to publish it, or the principal part of the discussion to which its reading gave rise:—

Bath, May 10, 1856.

Sir,—I am instructed by Mr. Flintoff to apply to you with reference to a libellous letter which appears to have been addressed by you to Mr. Lanwarne, of Hereford, and to have been publicly read at a meeting of the Town Council at that place, and then printed in the local newspaper. The letter, unanswered by Mr. Flintoff, who indignantly repudiates the allegations it contains, is calculated to do him serious injury; and unless you retract those allegations, and make a proper apology, and unless, besides, you express your readiness to compensate him for the pecuniary damage which the sending of such a letter, and its consequent publication, must have done, my instructions are to commence legal proceedings against you; and I will thank you to name your attorney, with whom I will cause the necessary process to be left.

I am, Sir, your obedient servant,

Thomas G. Barlow, Esq. E. F. SLACK.

CITY OF LONDON COURT OF SEWERS.

GUILDHALL, APRIL 29.

PUBLIC LIGHTING OF THE CITY.

At a Meeting of the Commissioners—Mr. Deputy PEWTRESS in the chair—the tenders for lighting the City were taken into consideration. There were present, as representatives of gas companies, Mr. Benjamin Hawes, chairman of the Chartered; Mr. Robert Alexander Gray, chairman of the City; and Mr. Gabriel, deputy-chairman of the Great Central—with directors and officers of each company.

Mr. DAWE (the chief clerk) proceeded to read the tenders. The tender of the Chartered was for lighting 1100 public lamps, bats'-wing burners, at £4. 5s. per lamp for one year, and £4. 2s. per lamp per annum for three years. It was stated by the chief clerk that the former contract of the Chartered was £2. 19s. 6d. per lamp, and the great discrepancy in the price was remarked upon.

The tender of the City Company was £4. 10s. per lamp per annum for one year, and £4. 6s. per annum for three years. The district tendered for included 1700 lamps.

The tender of the Great Central was £4. 6s. per lamp per annum for one year, and £4. 4s. for three years.

The representatives of the several companies were then requested to retire whilst the tenders were discussed.

Mr. Deputy BOWER remarked, that the singular uniformity of the tenders looked like a combination between the companies to get a good price. He thought they must have had a meeting on the subject. He thought from £2. 19s. 6d. to £4. 2s. on the part of the Chartered was a very great leap, which he considered was not warranted by the present price of coals, as compared with the period embraced by the contract at £2. 19s. 6d. per lamp. Coal was now very much cheaper, and he thought there was no reason to apprehend a rise.

Mr. Deputy CORNEY said, taking the price at which private consumers in the City were supplied, and which was regulated by act of Parliament, he thought the figures high for the public lamps.

Mr. Deputy DAKIN said, although from the position he had the honour to hold in one of the companies (Great Central) interested he should refrain from voting on the question, he would nevertheless state for the information of the court that the consumption of each lamp was about 20,000 cubic feet of gas per annum, which, at 4s. per 1000, would amount to £4. The lighting and cleaning amounted to about 15s. per annum. The tender, therefore, of the Great Central Company showed a reduction of 11s. per lamp, as compared with the price per 1000, viz., 4s., at which private consumers were supplied. The contracts of the Imperial Company were at an average of £5 per lamp; and he had ascertained that no contract for lighting existed in the metropolis at the present time below £4. 4s. per lamp, the price at which the Great Central had tendered. The company with which he was connected had put the price at the lowest figure they were able, and at a diminution of 11s. per lamp below what the price would be to private consumers, taking into consideration the lighting and cleaning.

Mr. Deputy CORNEY remarked, that the principle on which the Great Central had obtained the countenance of this commission was, that they would benefit the citizens in regard to the supply of gas beyond what was done by any then existing company. He thought it would be prudent to contract for one year only, as some other company might be induced to come forward to obtain the patronage of this commission. The expectation was that the public, through this commission, would be liberally served by the Great Central. It appeared to him, that because the act of Parliament did not apply as to the price of public lamps, the company had taken advantage of that circumstance to put an increased price upon the public lamps. He thought that was a good reason why they should not contract for more than one year.

Mr. ABRAHAMS thought the advance on the part of the Chartered from £2. 19s. 6d. to £4. 4s. an enormous one; it was an advance of one-third upon the former contract. However, it appeared the Chartered was lower in each instance in the present tenders than the other two companies, being £4s. 5s. and £4. 2s., as against the Great Central £4. 6s. and £4. 4s. He thought the commissioners had no alternative but to close with those contracts. He, however, would remark, that the price of coals was down very much, with every probability of a further reduction; and he thought they ought to have as favourable a contract as on the last occasion.

Mr. Deputy GODSON remarked, that it ought to be considered which company supplied the best quality of gas: that ought to be an element in the matter. Their medical officer could inform them which gas was the best as regarded illuminating power. He thought that ought to have some weight with the court in determining the contracts.

Mr. Deputy CHRISTY considered that the tenders were not higher than the companies were justified in asking. The price they had hitherto paid must have been ruinous to the company who had accepted it; but there was at that time great competition in gas in the City. No district of the metropolis was paying a less price than was now tendered. He was glad that the com-

petition in the City had ceased, and that there was a probability of a fair return to those who had invested their money in those undertakings. If they supplied the public lamps at a ruinously low price, some one must pay the sacrifice. He could see no reason why a company should be asked to light the public streets at a loss to themselves, any more than they could be expected to supply their customers generally at a loss. He thought the tenders were fair and reasonable. He knew companies who were getting £5 and and £5. 5s. per lamp, but none lower than was now tendered.

Mr. WEBSTER said the contract for Islington was £4. 12s. per lamp for five years, four of which had now expired. According to the number of hours the lamps burned, the cost, if burned by meter, would be considerably above the contract price. It must be quite apparent why the Great Central took so low a price on a former occasion; it was to introduce their gas into the City; and having accomplished that object, and as they afforded a satisfactory supply in every respect, he thought they were justified in asking something like a remunerating price for lighting the public lamps. He believed they could not afford to do it at a less figure than that tendered.

Mr. Deputy WHITESIDE remarked, that they had no alternative but to accept one or other of these tenders.

Mr. HAYWOOD (the engineer of the commission), in reply to an inquiry, stated that the Chartered and the City tendered for separate districts. The Chartered could only supply the northern and eastern districts, whilst the City could only supply the southern and western districts. The Great Central was the only company in a position to supply the whole of the City.

Mr. DAKIN said the former contract of the Great Central was at £3. 17s. 6d. per lamp.

Mr. WHITESIDE, considering the tender of the Chartered, would give that company the preference, if they were in a position to light the whole of the City; and he did not think there was any chance of getting a lower tender from the other companies. It had been remarked that the Great Central had accomplished their object in getting themselves established in the City, but he thought they might have made a more modest advance of price than they had done on the present occasion.

Mr. DAKIN: It is only an advance of 6s. 6d. per lamp; from £3. 17s. 6d. to £4. 4s.

Mr. Deputy CORNEY moved that the contracts be for one year only, in order, he said, to leave it open for the offer of lower tenders at the expiration of that period, which he thought was probable.

Wr. WEBSTER seconded the motion.

Mr. WHITESIDE remarked, that before the Great Central Company was established, the lowest price was £4. 4s. for bats'-wing lights.

The ENGINEER said, from 1844 up to the time of the existence of the Great Central, the price was £4. 4s. per lamp.

Mr. WHITESIDE believed, if that was the former price, it could not be done at much less now.

The ENGINEER remarked, that at that time the price to private consumers was 8s. per 1000.

Mr. WHITESIDE said, they were told that £4. 4s. did not pay, and he thought the price of coals was about the same as in 1844, upon the average.

Mr. WEBSTER said the price of gas to private consumers was 6s. per 1000 in 1845; and, if £4. 4s. was considered a fair price per lamp, then he thought they could not complain of that amount at the present time. The question was, whether there was any likelihood of a reduction at the expiration of a twelvemonth. He very much doubted it; and if so, there would be a loss of 2s. per lamp by taking the contract for a year only.

Mr. Deputy BARNARD remarked, that the advance on the Chartered tender was £1. 2s. 6s. per lamp, whilst that of the Great Central was only 6s. 6d., or only £1. 1s. in advance of the former contract of the Chartered. Therefore the tender was certainly in favour of the Great Central.

Mr. DAKIN remarked, that the original contract of the Great Central for the whole of the City was £3. 17s. 6d. per lamp, and the difference was as between that sum and £4. 4s. which was now tendered. With regard to what had fallen from Deputy Corney and Mr. Abrahams, he begged to say that the company with which he had the honour to be connected had not sailed under false colours. What they proposed to do was to reduce the price of gas in the City from 6s. to 4s. per 1000 to the private consumers; and he contended the guarantee which they gave to the corporation of this City had been faithfully and honourably fulfilled to the letter. They had not only reduced the price of gas 30 per cent., but the illuminating power of the gas had been increased 26 per cent. beyond the standard required by the act of Parliament. He contended that the Great Central had accomplished the purposes for which it was established; and it was unfair now, after the struggles through which that company had passed, to say that they had not served the great public purposes for which they were established. The contract for the public lights was taken quite irrespective of that company being admitted into the City at all. They found that the contract at £3. 17s. 6d. was not remunerative, and they did not consider themselves at all under an obligation to supply the public lights at so much less a sum than was charged to private consumers. He had taken pains to obtain information with respect to the contracts in other districts of the metropolis. He had communicated with the Imperial Company, the largest and perhaps best-managed company in the world, and had received a reply from the secretary that their contracts for public lights averaged £5 per lamp. The lights in the Strand, he found, were supplied by the London Company, also at £5 per lamp. The South Metropolitan contracts averaged £4. 15s., and the tender of the Great Central was at the lowest price of any contract in the metropolis, viz., £4. 4s. He thought, after these remarks, the court would be of opinion that the company which he had the honour to represent had acted with liberality, both in respect to this tender and in their conduct to the public at large.

Mr. BARCLAY moved that the contracts be taken for three years.

Mr. ROSS seconded the motion. He said he thought it useless to delay a decision upon the matter. They had asked for tenders and had received them, and he thought they could not complain of the price of 1844, at a time when there was considerable opposition in gas in the City. He did not consider this by any means an overcharge, and he thought they were in a very fair position to come to a decision for three years. They could not expect a lower price; and if they delayed the contract, they might find themselves in a much worse position, with considerable impediments in their way. He thought the citizens at large were under great obligations to the Great Central for the benefits of cheap gas. For years before the establishment of that company, the other companies made the public pay a larger price than was justified by the article supplied. The Great Central came in under the auspices of the corporation, and caused a reduction of price to the whole body of consumers. He considered that company had acted with great fairness and liberality, and that they were not open to the remarks that had been made upon them. The reports of the chemical referee, who was also an officer of this court, proved the high quality of the gas supplied; and if they went elsewhere they would not be served better, if so well. For himself he felt personally indebted to the Great Central for what they had done for the City.

Mr. Deputy GODSON also defended the Great Central, and supported the proposition for a contract for three years.

The CHAIRMAN put the question, when there appeared 11 for and 5 against.

It was then agreed that the tender of the Chartered at £4. 2s. per lamp for the northern and eastern districts be accepted.

It was also agreed that the tender of the Great Central for the southern and western districts, at £4. 4s. per lamp, be likewise accepted.

The representatives of the companies were readmitted, and informed by the chairman of the decision at which the court had arrived, and that portion of the business of the day was concluded.

PUBLIC LAMPS AT MALVERN.

At the last meeting of the Malvern Improvement Commissioners, the following report from Mr. Jones, the engineer of the Gas-Works, was laid before the board:—

TO THE GAS COMMITTEE OF THE MALVERN IMPROVEMENT COMMISSIONERS.

April 22, 1856.

Gentlemen,—The monthly returns from the gas-works having come before me, I remark that the public lamps are burned all night; and, as you may not be aware of the cost of same, I beg to hand in a tabular statement for your guidance, and, further, to recommend that the hours of lighting be reduced.—I am, gentlemen, yours obediently,

J. HODGSON JONES.

Time of Burning.	Mid-summer Qr.	Michael-mas Qr.	Christ-mas Qr.	Lady Day Qr.	Total No. of Hours a Year Burning.	Rate of Consumption per Hour.	Total Cost of each Lamp, at 6s. per 1000 Cubic Feet.		
	Hrs.	Hrs.	Hrs.	Hrs.	Hrs.		£	s.	d.
From dusk to 10 o'clk.	186	258	541	458	1443	@ 5 c. feet	2	3	3
11 ,,	277	350	633	548	1808	,, ,,	2	14	3
12 ,,	368	442	725	638	2173	,, ,,	3	5	2
1 A.M.	459	534	817	728	2538	,, ,,	3	16	2
2 ,,	550	626	909	818	2903	,, ,,	4	7	1
All night.	732	869	1421	1305	4327	,, ,,	6	9	10

Some demur was raised as to the correctness of Mr. Jones's calculation, and

Mr. EDWARDS explained that, if the lamps were kept burning from dusk till daylight, the cost would amount to £1300 per annum.

The CHAIRMAN said that he had not altered his opinion as to the desirability of keeping the lamps lighted the whole of the night; but they must consider their means. It would therefore be better to effect a curtailment of the expenditure at once; for a time, at least.

Mr. BURROW complained that £6. 9s. 10d. per lamp was a great amount. Could anything be named upon which Mr. Jones had based his calculations—for instance, the expenditure incurred in any other town?

Mr. ELMSLIE also remarked upon the charge per lamp, while in other towns he could name it was only about one-half—viz., £3.

Mr. EDWARDS attempted to explain that gas companies always lost by contracting for the lighting of public lamps at so low a rate. They did so merely to introduce their gas into a town.

Mr. BURROW considered that Mr. Jones should be called upon to explain upon what he had based his calculations.

Mr. STANNAH suggested, in order to reduce the expenditure, the removal of some of the lamps.

Mr. ELMSLIE and Mr. BURROW both strongly objected to this course.

The CHAIRMAN remarked, that in Bath gas was supplied at the rate of 4s. 6d. per 1000 feet, and the returns were 10 per cent.

Mr. BURROW said they had succeeded in lighting the town properly, and he should be sorry to see the board taking the retrograde steps advised by Mr. Stannah. He thought the town would rather submit to a slight increase on the rates.

Mr. EDWARDS said there was one thing to be considered—if Mr. Jones's calculation was right, they could not go on, as the present rate of expenditure would involve more money than they were empowered by act of Parliament to raise. It would, however, be easy to calculate the expense when they knew what each lamp would burn per hour.

Mr. BURROW inquired what would be the gross rate necessary to cover the expense of lighting the lamps as recommended by Mr. Jones.

Mr. MORRISON replied that, as £1300 would be expended, a rate of 2s. in the pound would be required. They would then be without a penny for anything else.

Mr. EDWARDS observed, that if the lamps were put out at twelve o'clock at night, the expense would be reduced one-half; and, after some further discussion, he gave notice that at the next meeting he would move the rescinding of Mr. Burrow's motion, then on the books, for lighting the public lamps all night; and this course being agreed to, the matter ended for the present.

NORWICH.—On Sunday night (20th ult.), about twenty minutes past ten o'clock, an explosion of gas occurred at the bank of Messrs. Gurneys and Birkbecks, which did considerable damage to that part of the new building which looks towards the Castle Hill. It is the duty of one of the two clerks who sleep in the bank to go through the rooms to ascertain that all is safe. In one of the rooms on the ground-floor at the back, looking into the garden, he found the moveable gas-burner had slipped down to the full extent. In slipping it up the flame of his candle, it is supposed, came in contact with the gas which was escaping. In an instant a tremendous explosion took place, doing very considerable damage to that part of the building. The entire front, from the top to the bottom (three storeys), is driven away from the sides; the joists and floor of the room above the one where the explosion took place were forced up nearly a foot; the entire furniture—sofas, chairs, and pictures—thrown in a confused heap on the floor; the bookcase-doors forced open, the windows forced out, the curtains torn, the carpet destroyed, and the walls in the bed-room above separated. In the room where the explosion took place, the window, which was secured by iron-plated shutters and thick bars, was driven several yards into the garden, the frame riven into pieces, and the iron plating bent into a semicircle. The door was absolutely riven into shreds. The window of the room adjoining, both glass and wood-work, was smashed. The most extraordinary circumstance is, that the young man who was the accidental cause of the occurrence escaped almost entirely unhurt, although standing in the centre of the room, near the chandelier, when the explosion took place.—*Norwich Mercury.*

Price Current.

CASTINGS, per Ton.
Average Weight of Cast Iron Gas Pipes, per Yard.

1½ in.	2 in.	2½ in.	3 in.	4 in.	5 in.	6 in.	7 in.	8 in.	9 in.	10 in.	12 in.
16	21	28	33	51	70	89	107	126	149	177	208 lbs.

Retail Prices are 5 to 10 per cent. higher.	London.			Glasgow			Newcastle.			Wales.			Yorksh., Derbysh., and Staffordsh.		
	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Pig Iron, No. 1	4	5	0	3	15	0	4	0	0	4	10	0	4	0	0
1¼ and 2 inches Socket Pipes	8	0	0	7	5	0	7	10	0	7	15	0	7	10	0
2½ and 3 do. do.	7	10	0	7	0	0	7	5	0	7	10	0	7	5	0
4 and 5 do. do.	7	10	0	6	15	0	7	0	0	7	5	0	7	0	0
6 inches and upwards do.	7	5	0	6	10	0	6	10	0	7	0	0	6	10	6
Retorts, 1st fusion, hot blast	7	0	0		...		7	0	0	7	5	0	7	0	0
Do. 2nd fusion, cold blast	8	0	0		...		7	5	0	7	10	0	7	5	0
Tank Plates, ⅛ thick and above	7	10	0	6	15	0	7	0	0	7	5	0	7	0	0

COALS.

NEWCASTLE.	s.	d.		SCOTCH CANNEL.			per ton.
Unscreened				Boghead ....at Leith	28	0	,,
Whitwell Primrose	7	0	per ton.	Kirkness.....best	23	0	,,
Pelton and Medomsley	7	6	,,	Capeldrae, first quality	20	0	,,
Pelaw	7	9	,,	Ditto, second quality	12	6	,,
Burnhope, Eighton Moor, New Peltor, Peareth, South Pelaw, Washington Hutton, and South Peareth [nel.	8	0	,,	Lesmahago at Glasgow	25	0	,,
				Ditto at Leith	27	6	,,
				Arniston	22	0	,,
				Wemyss	20	0	,,
				Knightswood	18	0	,,
Ramsay's Newcastle Can-	14	0	,,	Methill	13	0	,,

SUNDRIES.

Best Newcastle fire-bricks,	60s. per 1000	Welch bar iron in London	£9. per ton.
Ditto ditto clay	12s. per ton.	Foreign spelter	£23. 17s. 6d. ,,
Cliff's fire-bricks at Wortley,	57s 6d p 1000	English block tin	£133 ,,
Tough cake copper	£126 per ton.	Ditto ditto refined	140 ,,
English pig lead	£26 ,,	Banca ditto	136 ,,

WROUGHT IRON TUBING, subject to 35 per cent. Discount.

	2 inches.		1¼ inch.		1½ inch.		1 inch.		¾ inch.		½ inch.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Patent welded tubes, from 2 to 12 feet, per foot	1	8	1	0	0	10	0	7	0	5	0	4½
Ditto ... ... ,, 6 in. to 18 in., each	3	0	2	0	1	9	1	3	1	0	0	9
Connecting pieces, or long screws	3	6	2	3	2	0	1	6	1	2	0	11
Bends, springs, and elbows, wrought iron	3	9	2	3	1	9	1	0	0	10	0	8
Tees, wrought or cast	4	0	2	6	2	0	1	6	1	1	0	10
Crosses, wrought or cast	4	6	3	0	2	6	2	0	1	6	1	2
Iron cocks	17	6	9	6	7	6	4	6	3	3	2	6
Ditto, with brass plug	28	0	16	0	13	0	7	0	5	6	4	6
Diminishing sockets, caps, plugs, and nipples	1	3	0	9	0	8	0	6	0	5	0	4
Plain sockets	1	0	0	8	0	7	0	5	0	4	0	3
Syphons, 2 quart	15	0	14	0	13	6	13	0	12	0		

FREIGHTS, per Ton.

Coastwise—Newcastle.		*Foreign.*	
Chatham & Roches.	7s. 6d	Boulogne	8s. 6d
Cork	11 0	Barcelona	31 0
Dover	8 0	Bordeaux	17 6
Dublin	12 0	Cadiz	17 6
Exeter Quay	9 6	Calais	8 6
Folkestone	8 0	Dieppe	10 0
Hastings	9 0	Genoa	35 0
London	7 6	Hamburg	9 9
Lowestoft & Yarmth	5 0	Havre	10 0
Lynn	6 0	Leghorn	23 0
Portsmouth	8 9	Lisbon	17 0
Plymouth	9 0	Rotterdam	9 6
Whitstable	7 0	Stettin	15 0
Weymouth	8 6	Trieste and Venice	37 0

Advertisements.

MR. SHEEN, Gas and Railway Lantern Maker, 90½, Holborn Hill, begs to inform Managers of Gas-Works, &c., that she continues to contract and supply Lanterns on reasonable terms, and keep them in repair by the year.

WARWICK LOCAL BOARD OF HEALTH.—Contracts for Drainage and Water-Works.—The Board hereby give notice, that they are prepared to receive TENDERS from parties who may be willing to CONTRACT for LAYING certain STONEWARE and CAST-IRON DRAIN PIPES and CAST-IRON WATER PIPES, Building an Engine and Boiler House, Constructing Reservoirs, Filter Beds, and Pump Well; also for supplying a Wrought-iron Tank, and the Construction of a Service Tower, and other works. The contract, drawings, and specifications may be examined at the office of the undersigned, at Warwick, on and after the 8th instant, where also statements of quantities and forms of tender may be obtained. Further particulars will be given at the offices of Mr. LISTER, Engineer to the Local Board, 4, Trafalgar Square, LONDON. Tenders must be sent in on or before the 2nd day of June next. No tender will be entertained unless duly made upon the printed form.

By order of the Board,
JAMES TIBBITS, Clerk to the Local Board.
Warwick, May 1, 1856.

TO GAS ENGINEERS, GAS CONTRACTORS, AND OTHERS.

MR. PRESTON LUMB is prepared to receive TENDERS for the MAKING of GAS in a flourishing town situate in the north of England. The Gas to be equal in quality to that supplied by the Imperial and Great Central Gas Consumers' Companies in London. The quantity of Gas to be determined by the consumption of consumers and public lights. The Works are in a perfect state of repair. The Company will advance money on account, and the Contractors will be required to adjust accounts half-yearly. Security to the amount of £600 will be required for the full fulfilment of Contract. The Contract will be for seven years certain. The present annual make of Gas is about 10,000,000 cubic feet.

All further information may be had on application to Mr. LUMB, 33, Beaufort Street, CHELSEA, who will receive Tenders till the 10th of June next.
May 1, 1856.

PATENT GAS METER MANUFACTORY,
No. 66, Snow-hill, London.

WILLIAM SMITH, by the improvements he has made in the Wet Meter, and which he has secured by her Majesty's Royal Letters Patent, the accuracy of their registry is rendered certain by the introduction of the adjusting slide and hydraulic, whereby a Perfect Water Level is readily obtained, and the Hydraulic precludes the possibility of abstracting water from the meter by increased pressure or otherwise, thus surmounting the great desideratum of the Wet Meter. In his Patent Equitable Gas Meter neatness and strength are combined, the backs and fronts of the case being stamped by powerful machinery out of thick plate iron (tinned or galvanized); and the internal construction is of the best metal, which will resist the action of any impurity in the gas.

Old Meters may readily have the adjusting slide and hydraulic applied, thereby having accurate measurement assured.

Station Meters, Governors, &c., made on the shortest notice.

By Her Majesty's Royal Letters Patent.

JOSEPH BOULTON,
PATENT DRY GAS-METER MANUFACTURER, and also Maker of his Improved WATER METERS.

No. 28, BAGNIGGE-WELLS-ROAD, CLERKENWELL, adjoining the Police Office.—Late of No. 1, Coppice-row, LONDON.

Experimental and Station Meters of any size made to order on the shortest notice.—Governors, Pressure Registers, Gas-cooking Stoves, and every description of Gas Apparatus.

TO GAS COMPANIES.

TO be Sold, Four Dry Lime Purifiers, each 13 ft. 2 in. long, by 4 ft. 2 in. wide, inside, divided into Three Compartments, with Three Tiers of Trays in each. These have only been in use since 1847, and are removed to make room for larger ones.—For particulars apply to the MANAGER, Gas Works, CARLISLE.
March 12, 1856.

DRY-LIME PURIFIER.

TO be Sold, by Private Contract, a DRY-LIME PURIFIER, in good condition, 8 feet square, divided into Four Compartments, with Valve in the centre; the Inlet and Outlet Pipes of 4 inches diameter. Is now ready for inspection at the BEVERLEY Gas-Works.

BRYAN DONKIN and CO.'s improved GAS VALVES have been adopted by numerous Gas Companies in England and abroad, and their advantages and great security fully proved. Very large numbers are in use. Prices from 11s. to 14s. per inch diameter. BRYAN DONKIN and Co.,
Engineers, near Grange-road, BERMONDSEY.

NOTICE.—Mr. N. DEFRIES, Consulting GAS ENGINEER, begs to inform gas companies and the public, that he is desirous of meeting any gentlemen at his WORKS, NEW ROAD, ST. PANCRAS, where, under his own superintendence of the manufacturing department, they will have the fullest opportunity of investigating the many improvements he has recently effected in his ROTARY-VALVE DRY GAS-METER, by which full security will be afforded against leakage and non-registration, even against the searching effects of Cannel Coal Gas. The Rotary-Valve Meter is warranted to register inflexibly correct at a working pressure of half a tenth, and less than a quarter of a foot per hour upon a blue light; and a guarantee will be given to all gas companies to keep it in repair for not less than five years, free of expense. With this meter the gas-supplier may fully depend upon a fair return, and the public upon having a just measurer.

GAS BATHS, GAS COOKING and HEATING STOVES, for all classes. The British Polytechnic Gas-fire, &c. Conservatories and Buildings heated by gas, and perfect ventilation secured.

Any gentleman desirous of consulting Mr. Defries in especial cases, may meet him either at his office, 145, REGENT STREET, or at his residence, 5, FITZROY SQUARE, by giving one day's notice.

Gas-works erected for private houses, where no gas company exists.

VOL. IV. of the JOURNAL of GAS-LIGHTING for 1855, is now ready for delivery, price 15s., bound in cloth and lettered. Cloth backs for binding, 2s. 6d. each. A few copies of Vols. II. and III. are also still on sale.
W. B. KING, 11, Bolt Court, Fleet Street.

H. JONES, Gas Meter Manufacturer, No. 41, OLD-STREET, St. Luke's, London, begs respectfully to call the attention of Gas Companies to his latest improvements in the WET METER, by means of which water cannot be abstracted, neither can Gas by any possibility pass through the Meter without registering.

THE British Portable Gas Apparatus COMPANY.
LIMITED.—CAPITAL, £20,000.

This Company is organised to Manufacture and Sell an IMPROVED GAS APPARATUS, Patented by ABRAM LONGBOTTOM, C.E.

By the use of this Apparatus, Gentlemen and Manufacturers residing or having their works beyond the gas limits of our cities and towns, can be supplied at a small cost with the means of manufacturing their own Gas.

The Company will furnish the material out of which the Gas is to be made.

The Gas produced by the use of this Apparatus and Material is of great purity, containing nothing that is injurious to Health, Furniture, Metals, or Paint.

The sphere of the Company's operations will be extensive, viz.:—Towns and Villages where gas is not already introduced — Noblemen's and Gentlemen's Country Seats—Country Manufactories—Railway Stations—Hospitals—Asylums—Colleges—Schools—and every place where purity and freedom from all that is injurious and noxious in light is of consequence.

It is confidently anticipated that the profits of the Company will be large; their sources will be threefold, viz.:—

1. By the Sale of the Apparatus;
2. By the Sale of the Oil from which the Gas is made; and,
3. By the Purchase and Resale of the Refuse Material produced in the Manufacture of the Gas.

On an average, one gallon of the Oil sold by the Company will produce 100 cubic feet of Gas, and leave one gallon refuse, or residuum, which residuum, after undergoing a simple and inexpensive chemical process, can be sold for more than its original cost.

One hundred cubic feet of this Gas will burn as long, in the same burners, as 300 feet of ordinary coal gas, and yield a superior light.

Cost of Oil, in England, would be about 9d. per gallon.

The price of a Machine competent to supply ten burners five hours each per night with gas, for one week, would be £50; the consumption of gas per week would be about 300 cubic feet.

CALCULATION OF PROFITS.

Say 200 Machines of the above size sold in one year, the cost of which would be £25 each. Sale price, £50	£5000 0 0
Profit on three gallons of Oil per week, for one year, for 200 Machines, at 3d. per gallon	390 0 0
Profit on three gallons residuum per Machine per week, for one year, for 200 Machines, at 2s. per gallon	3120 0
Yearly profit, say	£8510 0 0

Or over 40 per cent. upon the Capital of £20,000.

T. C. REILLEY, Secretary.
41, Moorgate Street, City, London.

WEST and GREGSON,

GAS-METER MANUFACTURERS, &c.
UNION-STREET, OLDHAM.

Station and Experimental Meters, Gas Pressure Registers, Gauges, Experimental Gasholders, Governors, Slide Valves, &c. &c.

W. and G. would respectfully call the attention of Gas Engineers and Managers to their Station-meters, having made and erected the largest in use at the present time, two of which may be seen at the Stockport and Liverpool Gas Works, on application to the respective Engineers.

JAMES FEATHERSTONE,

ENGINEER,
Manufacturer of GASHOLDERS, IRON ROOFS, and every description of Gas Apparatus.
ALLIANCE IRON WORKS,
CLAYTON, near MANCHESTER.

JOHN BENT,

MANUFACTURER OF GAS METERS,
283, BELL BAND ROAD,
BIRMINGHAM,
(Established 1830),

Begs respectfully to call the attention of Gas Companies, Engineers, &c., to his WET GAS METER, made upon the most improved principles, the most admirable materials, and warranted to register correctly.

EIGHTON MOOR GAS COALS.—

Parties wishing to be supplied with these first-class Gas Coals will please to apply to Mr. MATTHEW NESBIT, EIGHTON MOOR OFFICE, NEWCASTLE-UPON-TYNE. These coals are well known as among the richest in gas, and working the roundest on the River Tyne. They are extensively used by metropolitan gas works.

MR. WILLIAM RICHARDSON,

CONSULTING ENGINEER,
DUDLEY.

GEORGE CUTLER,

GASHOLDER MAKER,
No. 8, WENLOCK-ROAD, CITY-ROAD,
LONDON.

Contracts for Tanks, Gasholders, Roofs, Purifiers, and all descriptions of Gas Apparatus executed on the most reasonable terms. Improved Slide Valves, Steam, and Range Boilers, and Smiths' Work, of the best materials and workmanship.

BIRTLEY IRON WORKS,

CHESTER-LE-STREET,
DURHAM.

Manufactory for every description of Casting and Machinery for Gas Works and Water Works.

Warehouse in London for Cast-iron Pipes and Connections of all sizes and in any quantity, Scott's Wharf, Bankside, Southwark.

Office in London, Mr. E. M. PERKINS, 78, Lombard Street.

ROBERT MACLAREN,

(Successor to Andrew Liddle and Co.,)
IRONFOUNDER AND GAS ENGINEER.

Manufacturer of Patent Iron Tubing, Block Tin, Lead, and Composition Tubing. Cast-iron Gas and Water Pipes of all sizes, and every description of Gas Apparatus.
GLOBE FOUNDRY, GLASGOW.

WHITWELL PRIMROSE GAS

COAL.—These excellent Gas Coals are wrought from the HUTTON SEAM *only*, and can be shipped either at the South Dock, SUNDERLAND; or Old Harbour, HARTLEPOOL; or Brandling Drops, SOUTH SHIELDS; on application to the WHITWELL COAL COMPANY, Sunderland.

PATENT FIRE-CLAY RETORTS.—

O. BROTHERS and COMPANY, Manufacturers of O. Brothers's Patent, beg to state that these Retorts, being made in one entire operation, and in one piece, of any required shape, length, breadth, and height, are not liable to cracks and fissures, of which there is a just and general complaint; and consequently superior to, and cheaper than, any hitherto manufactured.

GREAT REDUCTION IN PRICES—30 per cent. cheaper than any other Clay Retorts manufactured.

Shape.	Sizes.	Length.	Thickness.	Price at Railway Station, Blackburn.	Price per foot run of any required length, at Blackburn.
		feet.	in.	£ s. d.	s. d.
Dee.....	12 in. by 12 in.	8	2½	3 0 0	5 0
,, ...	14 in. by 12 in.	8	2½	4 0	5 6
,, ...	16 in. by 13 in.	8	2½	2 10 0	6 3
,, ...	18 in. by 14 in.	8	2½	2 16 0	7 0
,, ...	19 in. by 13 in.	8	2½	2 16 0	7 0
,, ...	20 in. by 14 in.	9	3½	3 7 6	7 6
,, ...	24 in. by 15 in.	8	2½	3 12 0	9 0
Round.....	15 in. by 15 in.	8	2½	2 10 0	6 3
,, ...	15 in. by 15 in.	10	2½	3 2 6	6 3
,, ...	18 in. by 18 in.	8	2½	3 0 0	7 6
Oval Retort	18 in. by 12 in.	8	2¾	3 0 0	7 6

All other sizes and shapes in proportion, to order.
References and further particulars may be obtained on application to the Patentee, Gas Works, BLACKBURN.

F. & C. OSLER,

44, OXFORD-STREET, LONDON;
Manufactory—Broad-street, Birmingham,

MANUFACTURERS OF GLASS CHANDELIERS, GLASS LUSTRES, TABLE GLASS, &c. &c.

ELEGANT CRYSTAL GLASS CHANDELIERS, FOR GAS

(Made from "REGISTERED" DESIGNS), with GLASS BRANCHES, &c.; suitable for DRAWING-ROOMS and BALL-ROOMS. The more extensive use of GAS in private dwellings has induced Messrs. OSLER to direct their particular attention to the manufacture of this class of articles—which, with a view to their general adoption, are offered at very moderate prices. Purchasers can select from a great variety of patterns, to which additions are being constantly made.

THEATRES, CONCERT, ASSEMBLY, AND BALL ROOMS LIGHTED BY ESTIMATE ON THE LOWEST TERMS.

RUTTER ON GAS LIGHTING.

Hundred and Thirtieth Thousand.
ADVANTAGES
OF
GAS IN PRIVATE HOUSES.
BY J. O. N. RUTTER, F.R.A.S.
A New Edition, Revised in 1855.

Price:—Per 1000 copies, £5; 500 ditto, £3. 15s.; any smaller number, 12s. per 100.

Twenty-sixth Thousand.
GAS IN DWELLING-HOUSES:
ITS USES, CONVENIENCES, AND ECONOMY.

Price: —1000 copies, £3. 3s.; 500 ditto, £1. 15s.; any smaller number, 7s. 6d. per 100.

A single copy of either of the above-mentioned books will be sent, on application to the Author ONLY, by payment of the postage (1d.).

These little books are written in a simple and familiar style; showing the comfort, convenience, safety, and economy of Gas. They are intended for gratuitous distribution by Gas Companies. They have already done good service, and the author is anxious still further to extend their usefulness.

The present high prices of tallow and oil are favourable to a more general adoption of gas in private houses. Let its advantages, as yielding a pure, cheap, and healthful light, be properly explained, and there will be no difficulty in getting over a few old-fashioned prejudices. Those persons who have experienced the benfits of gas-light never go back to candles or lamps.

JOHN W. PARKER AND SON,
WEST STRAND, LONDON.
Black Rock, Brighton.

J. JONES, Iron Merchant, 6, Bank-

SIDE, has long been known to sell the following Castings at prices lower than any other house in London:—Socket and Flange Pipes, Bends, Branches and Tees, Syphons, Lamp-posts, Rain-water Pipes, &c.; also, Hot Water Pipes, Elbows, Tees, Cylindrical and Saddle Boilers, and every Fitting for the same. Drawings and Prices of the above on application to J. JONES, Iron Bridge Wharf, 6, BANKSIDE, near the Southwark Iron Bridge.

12,950 CUBIC FEET OF GAS,

Specific Gravity ·820, produced from a ton of BATHVILLE CANNEL COAL, a Coal identical with that named Bathgate, Boghead and Torbane Mineral.

JAMES LAWRIE and CO.

COUSIN LANE, UPPER THAMES STREET,
SOLE AGENTS.

Messrs. LAWRIE and Co. are also Sole Agents for the excellent KNIGHTSWOOD CANNEL, used by London Companies, and are Makers of RETORTS, Clay and Iron; SOCKET PIPES; and all kinds of CASTINGS.

SHEARS AND SONS'

PATENT DRY GAS METERS

Are supplied to Gas Companies and the Public as the best and simplest Dry Gas Meters in use. They are acknowledged to be of first-rate workmanship and accuracy of registration.—Shears and Sons continue to supply these Meters on the most favourable terms; and they also manufacture Wet Gas Meters, to which they apply their Patent Indices.

BANKSIDE, LONDON.

ADDISON POTTER,

WILLINGTON QUAY,
NEAR NEWCASTLE-UPON-TYNE,

Manufacturer of Clay Retorts, Fire Bricks, and every description of Fire Clay Goods.

WHITEHOUSE and CO.,

GLOBE PATENT TUBE WORKS,
WEDNESBURY,

Beg to draw the attention of Engineers and Managers of Gas Works to the superior quality of the Article they manufacture, both in respect of the iron employed, and the perfect manner in which it is welded; in proof of which they can refer to the testimonials of the most eminent Gas Engineers, and the experience of the principal of the large Gas Companies of the kingdom.
Orders promptly executed.

GAS LIGHTING.

MR. T. A. HEDLEY (A.I.C.E.),

CONSULTING GAS ENGINEER, may be consulted upon all matters connected with the manufacture and distribution of gas. Plans, specification, and drawings supplied.—Gas-Works, BANBURY.

ANDERSON'S
DOUBLE-ACTING PISTON EXHAUSTER

is the most simple and effective machine of the kind made. It gives no appreciable oscillation or slip; works with extremely little friction; and requires no internal lubrication.

These Exhausters are in operation both in London and the Provinces, pumping from 10,000 to 70,000 cubic feet of gas per hour. They occupy very little space, and may be set either perpendicular or horizontal.

Particulars of price, &c., may be had on application to MR. ANDERSON, at the Gas Works, Rotherhithe LONDON.

GAS EXPLOSIONS Prevented by

using the Tubes and Fittings Manufactured by
JOHN RUSSELL and CO.,
whose Goods are all well Tested and Warranted.
The first manufacturers of Lapwelded Flues for Locomotive and Marine Boilers.

The FIRST PRIZE of the Paris Great Exhibition was awarded to them for Gas Tubes and Fittings, and Tubes for Marine and Locomotive Boilers.

John Russell and Co. are the Original Manufacturers, and at present the Holders, of the Patent for Tubes.

WAREHOUSES,
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MANUFACTORY,
THE OLD TUBE WORKS, CHURCH HILL,
WEDNESBURY, STAFFORDSHIRE.

PATENT FLEXIBLE GAS TUBING.

JAMES LYNE HANCOCK'S

Vulcanized Indiarubber Hose Pipes and Tubing. Manufactory (and Warehouse), Goswell-mews, Goswell-road, London.

Gas Companies, Engineers, Gas Fitters, and the Trade generally, are respectfully informed this Tubing is now manufactured to any size, from ¼ inch bore and upwards, in 100-feet lengths, and perfectly cylindrical, either with or without a spiral wire inside.

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